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Selective Processing of Sexual, Violent, and Neutral Information: a Study Comparing Individuals With and Without a History of Sexual Trauma.

Stephanie Irene Bush
Louisiana State University and Agricultural & Mechanical College

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SELECTIVE PROCESSING OF SEXUAL, VIOLENT, AND NEUTRAL INFORMATION: A STUDY COMPARING INDIVIDUALS WITH AND WITHOUT A HISTORY OF SEXUAL TRAUMA

A Dissertation

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in

The Department of Psychology

by
Stephanie Irene Bush
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M.A. Louisiana State University, 1995
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Dedication

I would like to dedicate this work and my degree to my Aunt Tammy who did not live to see me accomplish this hard-fought victory. I know she is watching from heaven and celebrating with me.

I would also like to dedicate this to my parents, family, and friends who have patiently awaited the completion of so arduous a task. Thank you all for your love and support. Thank you for laughing with me when I needed it and comforting me when it seemed I would never finish. I owe you all so much.

And finally, I would like to thank God for the gifts of intelligence, strength of character, and sheer perseverance that has allowed me to accomplish the goal I have held so long.

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Table of Contents

Dedication....ii

Acknowledgements....iii

List of Tables....v

List of Figures....vi

Abstract....vii

Introduction....1

Method....21

Results....28

Discussion....61

References....80

Appendices....88

Vita....108

List of Tables

1. Participant characteristics....29

2. ANOVA results from dot probe detection latency data....31

3. Mean probe detection latencies for probes following sexual word pairs in milliseconds....35

4. Mean probe detection latencies for probes following sexual and neutral word pairs in milliseconds....38

5. Mean probe detection latencies for probes following violent word pairs in milliseconds....40

6. Mean probe detection latencies for probes following neutral word pairs in milliseconds....43

7. Correlations between the STAI, BDI, and Sexual Anxiety Rating Scale....48

8. Correlations between measures of depression, anxiety, and sexual anxiety and level of psychological symptoms for the trauma group....50

9. Correlations between measures of depression and anxiety and level of psychological symptoms for the control group....51

List of Figures

1. Probe Position by Word Position interaction for probes appearing after word pairs containing sexual words.....34

2. Probe Position by Word Position by Condition interaction for probes appearing after word pairs containing sexual words in Condition 1.....36

3. Probe Position by Word Position by Condition interaction for probes appearing after word pairs containing sexual words in Condition 3.....37

4. Probe Position by Word Position interaction for probes appearing after word pairs containing violent words.....41

5. Probe Position by Word Position interaction for probes appearing after word pairs containing neutral words.....44

Abstract

The current research investigated processing biases that influence responding to emotionally relevant information in individuals with and without a history of sexual trauma. Previous research (MacLeod, Mathews, & Tata, 1986; MacLeod & Mathews, 1988; Mathews & MacLeod, 1985) has indicated that individuals with anxiety disorders shift their attention toward threatening stimuli, resulting in reduced reaction times to probes appearing near such stimuli. This effect has been found to be content specific, in that individuals with certain fears respond faster to information congruent with their concerns. The current study was undertaken to explore the possible differences in attention allocation to sexual, violent, and neutral words between women with a history of sexual trauma and those without. Using the dot probe task, individuals were presented with classes of target words (i.e., sexual, violent, neutral, or a combination of these) and were asked to detect and respond to a neutral stimulus (dot probe) that followed word pairs containing target words. It was hypothesized that individuals with a history of sexual trauma would be faster to detect the dot probe that followed sexual and violent words when compared to individuals with no such history. It was suggested that this would occur because women who have suffered a sexual trauma would experience anxiety concerning sexual and violent stimuli. This in turn would result in relevant stimuli capturing attention. Thus, they might exhibit content-specific processing with regard to information

congruent with a sexually traumatic experience (i.e., sexual and violent information presented together).

As is noted later, the current study did not find such an attentional bias toward threatening words. Although the group of individuals who had experienced a sexual trauma reported more anxiety, depression, sexual anxiety, and PTSD symptoms, these differences did not lead to the expected differences on dot probe detection latencies. In general, the study found that all participants tended to be slower to detect the probe when an emotional word (sexual or violent) was present. This is consistent with a theory that conceptualizes attention in a resource allocation context. Possible explanations for the failure to find hypothesized results are presented.

Introduction

The incidence of childhood sexual abuse in the general population has been reported to range from 12% to 50% (Beck & van der Kolk, 1987; Brown & Anderson, 1991; Russell, 1983; Feldman et al.,1991). The Epidemiologic Catchment Area (ECA) study by Burman et al., (1988) reports a lifetime prevalence rate for any sexual assault to be 13.2% for a community sample. This study also found that women (16.7%) report sexual assault more frequently than men (9.4%). Additionally, it has been found that rates of reported sexual abuse and assault tend to be higher in clinical samples (Beck & van der Kolk, 1987; Bryer, Nelson, Miller, & Krol, 1987; Carmen, Rieker, & Mills, 1984) and have been linked to higher rates of psychopathology (Burman et al., 1988; Roesler & McKenzie, 1994; Mancini, Van Ameringen, & MacMillan, 1995; Briere & Runtz, 1988; Kinzl & Biebl, 1992).

Sexual trauma has been studied in relation to many psychological disorders including anxiety, depression, sexual dysfunction, somatization, and dissociation (Kinzl & Biebl, 1992; Briere & Runtz, 1988; Mancini et al., 1995; Roesler & McKenzie, 1994). In general, these studies have found that individuals with a history of sexual abuse or trauma have greater levels of psychopathology than matched controls. This trend of results has also been found in nonclinical populations (Briere & Runtz, 1988; Wayland, Roth, & Lochman, 1991). Research (Beitchman et al., 1992; Briere & Runtz, 1988; Wayland et al., 1991; Roesler & MacKenzie, 1994; Mancini et al., 1995) has also suggested that the threat or use of force by the perpetrator may be a

predisposing factor in the severity of psychopathology exhibited by individuals who have been sexually abused or assaulted. This issue of violence within the context of sexual trauma will be discussed later.

One of the problems related to the study of sexual trauma is its definition. Many definitions have been put forth for "sexual abuse." One of the most commonly used definitions defines sexual abuse as "sexual contact (i.e., touching through intercourse) between a girl under 15 years of age and an individual at least 5 years older" (Briere & Runtz, 1988; pg. 53). Unfortunately, this definition neglects those individuals who experience a sexual trauma later in life. The current study is not concerned specifically with "sexual abuse" but with sexual trauma in women. For the current purposes, sexual trauma will be defined as any unwanted or forced physical sexual contact that may include: fondling, oral sex, anal sex, or vaginal penetration. This definition allows for a broader study of sexually traumatic experiences regardless of the age of the victim.

Little research has been done to investigate the cognitive processing of individuals who have suffered sexual abuse or trauma to identify possible differences in comparison to individuals without such a history. It seems likely that an individual who has suffered a sexual trauma would process sexual information differently than a person who has not suffered a sexual trauma. In addition, individuals whose experience of sexual trauma has included force or the threat of force, tend to have more psychopathology (Brown & Finkelhor, 1986; Beitchman et al., 1992; Briere & Runtz, 1988; Wayland et al., 1991;

Roesler & MacKenzie, 1994; Mancini et al., 1995). If one assumes that forced and violent sexual activity are similar in nature, it could be suggested that individuals who have suffered a sexual trauma might process violent information differently than those who have not experienced a sexual trauma. This prediction is suggested because the very nature of sexual trauma implies some amount of force or at the very least, the implication of violence if the individual does not comply. In one of the few studies that have looked at cognitive variables of trauma, Dutton, Burghardt, Perrin, Chrestman, and Halle (1994) examined the cognitive schemata of battered women. Specifically, these authors investigated the meaning that battered women attached to the trauma of being beaten. They found that it is important to examine the subjective meaning attached to abuse in understanding symptoms of post traumatic effects and the negative cognitive schema that this population exhibits.

Understanding the differences in information processing between "normal" people and persons who have a history of sexual trauma could help to explain the psychopathology that is often present in the sexually abused population. One area of information processing that would be of interest is attention to and selective processing of sexual and violent stimuli. This discussion will focus on the desirability of considering the cognitive processing of sexual and violent material in a population that has suffered a sexual trauma.

Information Processing Approach

The first step in studying selective attention and processing is to consider how individuals process information in general. In its basic form, information processing provides a general model that describes the way in which individuals perceive, process, store, retrieve, and act upon incoming stimuli from the environment. The information processing (IP) approach attempts to understand how environmental and internal information is represented in the system and used by the individual (Fincham & Bradbury, 1991). In general, research within the IP approach attempts to control and manipulate the input of information. The integrity of the subjects' processing, on the basis of the quality and patterns of output (e.g., speed, accuracy, strategies, and biases), can then be inferred (Kaszniak, Poon, & Riege, 1986). The IP approach is important to the discussion at hand because at the most basic level, the current research is about information processing. The current study concerns strategic attention allocation to specific types of stimuli and uses reaction time as the output of interest.

Anxiety

Fear is considered to be a basic emotion that is universally present in all species, races, and cultures. Fear has a very elemental purpose in that it alerts the organism to the presence of danger and prepares the organism for action (Barlow, 1985). In an evolutionary sense, fear is inherently necessary to life. If a species was unable to detect and respond to danger, it would quickly become extinct. Anxiety is considered by some to be "pathological" fear (Barlow, 1985).

In other words, anxiety is a level of fear that is no longer necessary in our society.

Anxiety is believed to be distinct but related to fear. Epstein (1972) described anxiety as fear that is unresolved or arousal, resulting from perception of threat, that is unfocused In other words, anxiety can occur when one perceives the presence of danger even if that perception is wrong and danger is not actually present. This idea is very important in the context of anxiety disorders. For example, an individual with panic disorder (American Psychiatric Association, 1994) perceives the danger of having a heart attack even when that danger (and fear) is not medically warranted. This fear then becomes pathological because it is unwarranted and unnecessary and can be disruptive to the individual's life.

Individuals who experience traumatic events are understandably fearful during the actual trauma. The fear becomes anxiety when the individuals begin to perceive danger in many situations regardless of whether danger is actually present. It can also be considered pathological if these individuals generalize their fear to what were previously normal situations. Such would be the case if individuals who have experienced a sexual trauma begin to fear normal sexual relations. Therefore, not only would genuine danger situations produce fear in such an individual but even remotely similar situations to the original trauma might become conditioned to produce fear and anxiety. It is possible that such an individual would be in constant anticipation of a repeated trauma even if

such danger cues were not present. This would be considered anxiety according to Epstein (1972) because it is an unresolved fear.

Sexual Trauma and Anxiety

Numerous studies have linked sexual abuse and trauma to anxiety (Schulte, Dinwiddie, Pribor, & Yutzy, 1995; Burnam et al., 1988; Briere & Runtz, 1988; McLeer, Deblinger, Atkins, Foa, & Ralphe, 1988; Roesler & McKenzie, 1994; Mancini et al., 1995). Most of these studies have found that individuals who were sexually abused or assaulted had higher levels of general anxiety than control subjects who did not have a history of sexual trauma. Some researchers specifically examined the relation between Post-Traumatic Stress Disorder (PTSD) in sexually abused populations (McLeer et al., 1988; Cameron, 1994; Coons, Bowman, Pellow, & Schneider, 1989). In general, these studies have found that individuals with a history of sexual abuse are more likely to exhibit PTSD symptomatology than those who have not been abused. One problem in interpreting sexual abuse research is that most of the subjects included in the sexually abused population had been abused since early childhood and therefore the researchers did not have a measure of pre-abuse anxiety levels. In addition, studies of child sexual abuse neglect those individuals who have experienced a trauma later in their lives.

One study (Burnam et al., 1988) examined whether the onset of anxiety occurred before or after a sexual assault. They found that the anxiety disorders they were concerned with (e.g., phobia, panic disorder, and obsessive-compulsive disorder) tended to develop after the assault (especially phobia)

rather than being present prior to the assault. This result suggests that an anxiety reaction may be a common response to a sexual assault. Another study (Mancini et al., 1995) found that individuals with a history of childhood sexual abuse were significantly more likely to have suffered from simple phobia and agoraphobia without panic disorder when compared to control subjects. Briere and Runtz (1988) used a nonclinical population of undergraduate students and found that sexual abuse victims scored higher on measures of chronic anxiety and depression than their nonabused peers. Again, these studies fail to resolve the issue of whether anxiety results from sexual trauma or whether anxiety is a contributing factor to an individual being sexually abused. What is apparent from the literature is that individuals who have a history of sexual trauma tend to be more anxious than individuals who have not been sexually abused. This issue becomes important when considering the current research project.

Violent Crime and Anxiety

Victims of violent crime have been shown to exhibit elevated levels of psychopathology when compared to victims of nonviolent crimes and nonvictims (Norris & Kaniasty, 1994; Weaver & Clum, 1995). Unfortunately, most research done in this area includes violent sexual crime within the "violent crime" category and separate analyses have generally not been performed using this distinction. For example, Norris and Kaniasty (1994) conducted a study in which they compared victims of violent crime, nonviolent (property) crime, and individuals who had not experienced a crime on various measures of

psychological distress such as depression, anxiety, fear of crime, and somatization. They found that within their violent crime group, 54% had been threatened with or experienced assault, 23% had experienced aggravated assault (with a weapon), 19% had been robbed, and 6% had been raped. During analysis, the researchers did not separate the rape victim data from the other violent crime information. Regardless, Norris and Kaniasty (1994) found that victims of violent crime exhibited significantly more psychological distress including depression, anxiety, fear of crime, and avoidance behavior, when compared to victims of property crime (vandalism, larceny) and nonvictims.

Weaver and Clum (1995) presented a meta-analytic review of interpersonal violence and how it affects psychological distress. Their sample included victims of rape, childhood sexual and physical abuse, physical assault, and spousal assault. The researchers collapsed each form of interpersonal violence into two categories based on violence characterized by a sexual form of violation or not containing a sexual form of violation. They found a nonsignificant trend for sexual forms of violence to be associated with greater levels of psychological distress than nonsexual violence. Regardless of the distinction between sexual violence and nonsexual violence, Weaver and Clum (1995) found a statistically positive relationship between victims of interpersonal violence and psychological distress. When examining anxiety specifically, this study found a slight relationship between anxiety and interpersonal violence which suggests that not all victims of violence experience significant levels of anxiety afterwards.

Although the research is inconclusive regarding a link between elevated levels of anxiety and violent crime, there is reason to suggest that victims of violent crime might exhibit more fear and anxiety regarding violence and violent situations. It is difficult to separate the effects of nonsexual and sexual violence on psychological variables because most research in this area combines both kinds of violence into one category. It is therefore unclear if simple violence is responsible for the effects obtained or if violence in a sexual situation is the more important aspect. This concern is central to the current research problem because this study will attempt to investigate cognitive differences towards violent stimuli alone, as well as violent information in a sexual context. In addition, this study is interested in how a history of sexual trauma and anxiety level will influence cognitive processing. To begin this task, it is important to understand basic emotion and anxiety theory.

Bower's Model of Mood and Memory

Bower (1981) proposes a model of mood and memory in which emotions exist as distinct nodes embedded in an individual's associative network. This associative network encodes events, actions, emotions, and concepts as nodes and each of these nodes is characterized by its inputs and outputs. When an individual experiences an affective state the corresponding emotion node will be activated. This activation then spreads through the associative links to activate mood-congruent information such as memories, thoughts, themes, etc. Thus, mood-congruent information will be more easily accessible for processing. Bower (1981) predicts that information will be more easily retrieved if one is in

the same emotional state as when the memory was encoded. Although this model was primarily proposed to account for memory bias in depression, much of the theory can be applied to an anxious state as well.

Bower's (1981) model predicts a mood-congruity effect for incoming information. This idea suggests that incoming information in which the emotional content matches the individual's current emotional state will be perceived faster, attended to more, and processed more elaborately. These emotionally-congruent stimuli will thus be perceived more quickly than other stimuli and will be better learned and remembered. Bower (1987) states that it is as though individuals are biased to attend to information that maintains their emotional state. Therefore, Bower's (1981) model would predict that an anxious person would perceive and react more quickly to information (i.e., threatening stimuli) that maintains their emotional state.

Another influence suggested by Bower (1981) is a group of top-down mechanisms of emotional priming. This suggests that emotional arousal primes emotionally-congruent concepts and categories and these primed concepts and categories are then used to interpret ambiguous situations and events. For example, suppose that an anxious person were to enter an ambiguous social situation - one that could be interpreted as either negative or positive. The anxious person, being emotionally aroused and primed in an anxious way, will interpret the situation as threatening. This occurs because, when faced with a situation with both negative and positive aspects, the individual's primed anxious concepts and categories will be activated faster and will therefore be

used to interpret the situation (i.e., as threatening or negative). These ideas are similar to the theory proposed by Beck, Emery, and Greenberg (1985).

Bower's (1981) theory would support the idea that an individual who has suffered a sexual trauma and continues to experience anxiety concerning sexual issues would react in predictable ways. For example, the theory would predict that sexual information that is congruent with the individual's anxious concerns would be perceived more quickly and processed and remembered better. This tendency to attend to sexually traumatic information would serve to maintain the individual's state of anxiety regarding sexual situations. This type of response would also be predicted by Beck et al. (1985) in their theory of anxiety.

Beck's Theory of Anxiety

Beck, Emery, and Greenberg (1985) propose that clinical, maladaptive anxiety is caused by a biased information-processing system. They suggest that anxious individuals have cognitive structures that are content specific. That is, these structures (i.e., "danger schemata") are specifically concerned with the processing of threatening information. A number of factors play a role in establishing these danger schemata such as heredity, early experience, and modeling. Beck proposes that individuals with clinical anxiety have overactive danger schemata which influence a number of cognitive operations, including selective attention and processing. The model suggests that these idiosyncratic schema influence the perception and encoding of information towards congruent, threat-related stimuli in the environment. Therefore, anxious

individuals would be more likely to perceive and process threatening information, thereby strengthening their ideas that the world is a dangerous place. Beck et al.'s (1985) and Bower's (1981) theories predict similar outcomes for information processing within anxious individuals. Specifically, both models would predict that anxious individuals would be faster at identifying threatening information in their environments. One way of testing this response is the dot probe task.

The Dot-Probe Paradigm

The dot-probe paradigm proposed by MacLeod, Mathews, and Tata (1986) allows a researcher to directly measure how visual attention is distributed. Participants are presented with pairs of words simultaneously on a computer screen. One word is presented in the upper part of the screen and the other word is seen in the lower part of the screen. Participants are generally asked to read only one of the words, usually the word in the upper portion of the screen. A secondary task involving the detection of a visual probe (i.e., a small dot) is used to measure allocation of visual attention. The probe can appear in the location of either word immediately after the word is erased from the screen. Participants are required to press a button immediately when the dot is seen and it is this detection latency (i.e., reaction time) that is measured. Detection latency has been shown to be a sensitive measure of visual attention (Hoffman & Nelson, 1980; Navon & Margalit, 1983). The task of dot detection is seen as providing a neutral task not confounded by emotional

or verbal properties. The dot probe detection task differs from the Stroop task in that it (dot detection) does not require a verbal response.

The Dot-Probe Paradigm and Anxiety

Numerous studies have applied the dot-probe paradigm to anxious populations (MacLeod et al., 1986; MacLeod & Mathews, 1988; Asmundson & Stein, 1994; Mogg, Bradley, & Williams, 1995). In general, this research has found that anxious individuals shift their attention toward threatening stimuli (i.e., anxious words such as injury or humiliated) whereas normal, non-anxious individuals do not show such an attentional bias. MacLeod and Mathews (1988) studied the role of state and trait anxiety with regard to attentional bias and selective processing. They used first year medical students in their study and measured the participants' level of state and trait anxiety approximately 12 weeks before an annual exam and asked them to participate in the dot-probe task. The researchers then brought the participants back one week before the exam and found that state anxiety scores had increased for both groups. It was found that participants with high trait anxiety (i.e., individuals who report generally feeling anxious) tended to shift their attention toward *generally* threatening material during both experimental sessions. With regard to exam-related stimuli at the second experimental session when state anxiety was greater, high-trait individuals continued to show an attentional shift toward such stimuli, but low-trait participants exhibited increased attentional *avoidance*. The authors suggest that this type of mechanism may serve a homeostatic function in low-trait individuals. That is, low-trait participants "screen out" information

that tends to increase their level of state anxiety thereby keeping their level of anxiety relatively low. On the other hand, high-trait participants are not able to avoid such anxiety-provoking stimuli and continue to see the world as a dangerous place. MacLeod and Mathews (1988) propose that attentional response is not a function of state or trait anxiety alone but may involve an interaction of both. Regardless, individuals who tend to be anxious show an attentional bias toward threatening stimuli.

It has been found that the attentional bias found in anxious populations can be content-specific. Asmundson and Stein (1994) studied individuals with social phobia. When presented with both social and physical threat words, individuals with social phobia responded faster to dot probes following presentation of socially threatening words when compared to their response times to probes following the physically threatening words. This finding suggests that anxious individuals do not necessarily selectively attend to all threatening stimuli but may specifically attend to threat that is related to their own specific fear domain.

Many studies have been conducted using the modified Stroop color-naming task with anxious populations (Mathews & MacLeod, 1985; Mogg, Mathews, Bird, & MacGregor-Morris, 1990; Mogg, Mathews, & Weinman, 1989; Fox, 1993). In this paradigm, participants are shown words printed in different colors and their task is to report the color of the words and to ignore the content of the words. It has generally been found that anxious individuals are slower to name the color of threat words, as compared with non-anxious participants

(Mathews & MacLeod, 1985; Mogg et al., 1989; Fox, 1993). It is suggested that this effect occurs because of the interference caused by the emotional content of the threatening stimuli. In other words, anxious individuals may have a deficit in attention-processing capacities and because of activated danger schemata, are more likely to attend to the threatening aspect of the stimuli (i.e., the meaning of the word) than extraneous information (i.e., the color of the word). Mathews and MacLeod (1985) found content specificity as well. They used individuals who identified their main source of anxiety to be either physical concerns or social concerns. The researchers then presented words related to either physical anxiety or social anxiety and found that participants who reported mainly physical worries responded slower in color-naming to physically threatening words than participants who reported social concerns. Mathews and MacLeod (1985) suggest that this finding can be explained by different danger schemata that are activated in the two groups resulting in differing responses to the threat domains represented by social and physical threat words.

One study is of direct concern to the current research. Foa, Feske, Murdock, Kozak, and McCarthy (1991) used a modified Stroop task to study the processing of threat-related stimuli in rape victims. The researchers identified a group of individuals who had been raped and subsequently suffered from PTSD, a group who had been raped but did not exhibit PTSD, and a group of non-victimized controls. They presented their participants with rape-related threat words (i.e., assault, stalker), general threat words (i.e., cancer, panic),

neutral words (i.e., banana, cherry), and nonwords (i.e., punic, gosp) in different colors and asked them to color-name the words. This study found that the rape victims who did exhibit PTSD showed selective processing (Stroop interference) for rape-related stimuli, but the rape victims who did not have PTSD symptoms and the group of control participants did not show this selective processing effect. The researchers suggest that the Stroop interference effect for rape-related threat words was associated with the presence of PTSD, not just prior exposure to rape. This result was also found with military veterans with and without PTSD (McNally, Kaspi, Reimann, & Zeitlin, 1991).

Content specificity has been found with other anxiety disorders such as panic disorder (Ehlers et al., 1988; McNally, Reimann, & Kim, 1990), spider phobia (Watts, McKenna, Sharrock, & Trezise, 1986), and post-traumatic stress disorder (McNally et al., 1991). However, other researchers have not found this content-specific effect. Lavy, van Oppen, & van den Hout (1994) used the Stroop task with individuals with Obsessive Compulsive Disorder and did not find selective processing of concern-related stimuli. In most studies, however, it appears that individuals with specific concerns tend to react specifically to stimuli related to those concerns.

Using the Dot-Probe Paradigm with Sexual Stimuli

Research literature supports the idea that anxious individuals selectively attend to threatening stimuli. The literature also seems to suggest that this selective attention appears to be content specific (Asmundson & Stein, 1994;

Mathews & MacLeod, 1985; Ehlers et al., 1988; McNally et al., 1990; Watts et al., 1986; McNally et al., 1991). Bower's (1981) theory of mood and memory is consistent with these results. He suggests that information that is congruent with one's current emotional state will be attended to more and perceived faster than information that is mood incongruent. Bower also describes specific perceptual effects of mood in which a particular mood should prime and thus lower the threshold for incoming stimuli of congruent-affect. These ideas would be consistent with the finding that anxious individuals who are currently in an anxious state would perceive and respond faster to stimuli that matches their anxious concerns (as in the dot probe task). In addition, Beck et al.'s (1985) theory of anxiety is also consistent with the results concerning selective attention. They propose the existence of "danger schemata" that when activated influence the perception and processing of threatening information. In effect, these overactive danger schemata cause the anxious individual to selectively attend to those aspects in the environment that are dangerous. Therefore, both theories would predict that anxious individuals would perceive and respond to threatening stimuli more quickly than non-threatening stimuli.

It has already been discussed that individuals who have experienced a sexual trauma sometimes develop anxiety disorders and sexual dysfunction (Briere & Runtz, 1988; Burman et al., 1988; Roesler & McKenzie, 1994; Mancini et al., 1995; Shulte et al., 1995). One would assume that the individuals experience a considerable amount of anxiety regarding the trauma and sexual issues in general. Although Beck et al. (1985) do not specifically address how

danger schemata develop, they do propose a number of possible predisposing variables including heredity, early experience, and modeling. This theory would suggest that an individual with a sexually traumatic history could potentially develop danger schemata regarding sexual situations especially if violence or threat of violence was a part of the experience. If this occurs, the person would likely react to sexually threatening or violent stimuli similarly to the ways in which anxious individuals react to anxiety-provoking information as discussed earlier. Specifically, they would perceive and attend to threatening stimuli faster.

Bower (1981) would predict much the same response. If an individual is anxious regarding sexual or violent information and sees most of these stimuli as threatening, he/she would likely attend to affect-congruent stimuli in predictable ways. Bower (1981) predicts effects of mood congruity; that is, he proposes that incoming information that matches the individual's current emotional state will be attended to more, perceived faster, and processed more elaboratively. He also describes some perceptual effects of mood in which a particular emotion should prime and thus lower the threshold for incoming stimuli of a congruent nature. Both of these ideas are consistent with the notion that an individual who is anxious regarding sexual trauma and sexual issues in general, would perceive sexual information and especially sexually violent information, more quickly. Unfortunately, little research has been done that examines the information processing of sexual information in a population with

a sexually traumatic background. For this reason it is important to undertake a study looking at attention processes in such a population.

Problem

The purpose of the current study was to investigate attentional processes in a population with a history of sexual trauma. In general, the current research was interested in examining if such a population differs in how they process sexually non-traumatic words, violent words, and neutral words when compared to individuals without a history of sexual trauma. Specifically, this study was designed to investigate whether individuals who have experienced a sexual trauma respond differently to violent words alone, as opposed to violent words in a sexual context and vice versa.

The current study compared two groups of females: a group with a history of sexual trauma and a control group with no reported history of sexual trauma. Participants were presented with pairs of words on a computer screen and asked to read the word which appears in the upper portion of the screen aloud. Each participant was presented with one of the following conditions of target words. Participants viewed either sexual and neutral words; violent and neutral words; or sexual, violent, and neutral words. These conditions are referred to as sexual, violent, or combination conditions. In addition, each participant was presented with non-target neutral word pairs that acted as filler material. The word pair was removed from the computer screen and participants were asked to respond by pressing a button as quickly as possible when they saw the small dot probe. The probe could appear in either the upper

or lower portion of the screen and it replaced one of the preceeding words. The dependent variable of interest was the detection latency of the dot probe.

The current study was conceptualized as a 2X3X2X2 design [between Subject Group, between Word Type (Conditions), within Word Position, and within Probe Position]. Data was analyzed using 3 repeated measures ANOVA, one for each Word Type. In these separate analyses, the dependent variable was probe detection latency. The independent variables were Word Position, Probe Position, Subject Group, and Condition. Planned comparisons were employed to further examine the nature of any significant effects.

Method

Participants

The full study employed 122 female participants, 62 with a history of sexual trauma and 60 without such a history. Participants were recruited from undergraduate psychology courses and received extra-credit for their participation. Prior to participating in the study, they received and signed an informed consent form (see Appendix A).

Procedure

Participants were asked to sign the informed consent form and given the opportunity to ask questions. They were then given the demographic questionnaire, which contained a question asking about sexual trauma, in order to assign them to the appropriate group and random experimental condition. Participants were seated in front of the computer and given the following instructions:

> In this experiment, you will be presented with pairs of words, one on top of the other. Before each pair is presented, a "+" will appear in the middle of the screen to let you know that the words are about to be presented. Please read the top word of each pair aloud as soon as it appears. A small dot will sometimes appear after the two words disappear. This dot could appear where the top word was or where the bottom word was. When you see the dot, please press the space bar as quickly as possible. Are there any questions?

The participants were then given a short practice session with neutral stimuli before beginning the primary experiment. The experimenter stayed in the room during the practice session in order to ensure that participants were following instructions. Following the practice session, the experimenter left the room. After completing the computer task, participants completed the STAI, BDI, SES, and sexual situations anxiety rating scale. They were then administered the ADIS-IV structured interview. Finally, participants had the opportunity to ask questions and were thanked for their participation.

Materials

Word List

A list of 72 target words were used in the pilot study. These words were drawn from previous research (Buss, 1961; MacLeod et al., 1986; Mathews, Mogg, May, & Eysenck, 1989; Mathews & MacLeod, 1985) and pilot data. Twenty-four of the words were sexual (e.g., intercourse, vagina), twenty-four were violent in nature (e.g., assault, harm), and the final twenty-four were neutral (e.g., oven, spatula). Target words were paired with non-target neutral words that were matched to the target words for length. Another 100 neutral (e.g., tree, headlight) words pairs were randomly created to act as filler material. These filler neutral pairs were not matched for length with each other and were not used in analyses. In the single word type conditions (just sexual or just violent words), all target words of the specific word type were used. In the combined word type condition (all three word types), twelve sexual words and

twelve violent words were presented along with the twenty-four target neutral words. The words for the combined condition were randomly chosen from each word type (See Appendix B for lists of target words). Each word pair (48 target word pairs and 100 neutral word pairs) was presented twice. The average dot probe detection latency for the two presentations of each target word was used in analyses.

The word pairs were presented on an IBM compatible computer utilizing the Micro Experimental Laboratory (MEL; Butler, 1988; Schneider, 1988). Participants' attention were focused on the screen by the presentation of a "+" in the middle of the screen which cued them that a word pair was about to be presented. The words were presented for 500 ms in the center of the screen, separated vertically by 3 cm. The dot probe occurred on 144 (96 occurred after the 48 target word pairs and 48 occurred after randomly picked neutral word pairs) of the 296 trials and could replace either of the two displayed words. There was approximately 25 ms between the termination of the word display and the presentation of the dot probe. All word pairs were presented twice but their order of presentation was random.

On trials without dot probes, the next pair of words followed after 1 second. On trials with dot probes, the dot remained on the screen until the subject responded or until 1500 ms had elapsed. Data of interest came from dot probes that followed the 48 target pairs (actually 96 data points because each target pair was presented twice). The target word in each target pair

could appear with equal probability in either of the two spatial locations (upper or lower), as could the dot probe. Therefore, the position of the target word (target position) and the position of the dot probe (probe position) are two factors that varied independently on the target trials. The combination of the two factors provided four different conditions and for any subject, 24 of the 96 target pairs appeared in each condition.

Spielberger State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970). The STAI is a self-report method of assessing state and trait anxiety (see Appendix C). It contains two sets of 20 items in which one set asks about feelings at the moment (state anxiety) and the other set asks about general feelings (trait anxiety). The trait scale has been found to have adequate test-retest reliability (.73 to .86).

Beck Depression Inventory (BDI; Beck, Ward, Mendelson, & Erbaugh, 1961). The BDI is a self-report method of assessing depression (see Appendix D). The BDI has been extensively studied and validated. It's split-half reliability is reported to be .93 (Beck, 1973). Miller and Seligman (1973) estimate that the BDI's test-retest reliability for nonclinical populations to be .75 and is reported at .49 for clinical populations (May, Urguhart, & Tarran, 1969).

Sexual Experiences Survey (SES; Koss, 1985a). The SES is a questionnaire containing 13 items concerning sexual experiences (see Appendix E). The SES has an internal consistency (Cronbach's alpha) of .74 and a test-retest reliability of .93. Also, level of victimization obtained from

interview correlates .73 ($p<.001$) to self-report responses on the SES (Koss & Gidycz, 1985). Individuals are asked to respond "yes" or "no" to questions concerning sexual intercourse and sexual trauma. They were also asked at what age the event occurred and how many times the experience occurred. This provided a measure of how much time had passed since the trauma had occurred and an index of repeated trauma. Participants were also asked to rate the impact of the trauma on their lives using a 1 to 7 Likert scale with 1 indicating no impact and 7 indicating severe impact. There were three categories used to determine level of violence experienced by the individual: 1. emotional coercion (questions 1, 2, and 3); 2. threat of violence or force (questions 5, 7, and 9); 3. actual physical force (questions 4, 6, 8, and 10).

Sexual Situations Anxiety Rating Scale. For the purposes of this study, a simple Likert rating scale was designed to gather self-report data on participants' anxiety about sexual situations (See Appendix F). It contains five questions about physical affection/sexual situations participants are asked to rate on a scale of 1 to 5, with 1 being not at all anxious and 5 being very anxious. This provides us an with index of the amount of anxiety participants experience with regard to sexual situations. The ratings for the five questions were simply added and this number was used in analyses. Participants also had the option of NA if an item did not apply to them. Internal consistency (Cronbach's alpha) was .87 for this measure.

Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, DiNardo, & Barlow, 1994). This structured interview is used to differentiate diagnoses among anxiety disorders, depressive disorders, somatoform disorders, substance abuse, and psychosis according to the criteria put forth by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994). The ADIS-IV provides detailed questions concerning the criteria for the aforementioned diagnoses and allows for a thorough evaluation of psychopathology. For example, the section concerning social anxiety begins with the question "Currently, in social situations where you might be observed or evaluated by others or when you are meeting new people, do you feel fearful, anxious, or nervous?" The participant is asked to respond yes or no and depending on their response the rest of the questions in that section are either asked or not asked. A study (DiNardo, Moras, Barlow, Rapee, and Brown, 1993) using the ADIS-R, an earlier form of the structured interview using diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders (Third Edition, Revised; DSM-III-R; American Psychiatric Association, 1987), found the reliability of using the ADIS-R to diagnose psychiatric disorders to range from fair (k=.43) to excellent (k=.82).

In the current study, the results from the ADIS-IV were compared to DSM-IV criteria for each of the diagnoses. The answers provided by the participants were examined to see whether they met DSM-IV diagnostic criteria for each diagnosis. For example, if a participant met 3 diagnostic criteria for a

particular disorder, they were given a rating of 3 in the data base for that diagnosis. Each diagnosis provided by the ADIS-IV was evaluated separately and given a separate rating. This method provided a measure of how many criteria (symptoms) each participant met for each diagnosis covered in the ADIS-IV.

Computer Software. The Micro Experimental Laboratory (MEL; Butler, 1988; Schneider, 1988) was used to display the word pairs. The program was run on an IBM PC or compatible computer.

Statistics

Three general linear model repeated measures analyses of variance (ANOVA) were used to analyze the data. Different ANOVAs were used to analyze the data from each of the three word types (sexual, violent, and neutral). The dependent variable for each ANOVA was probe detection latency. There were three independent variables for each ANOVA: Subject Group, Word Position, and Probe Position. Subject Groups were those with a history of sexual trauma and those without such a history. Word Position was where the target (sexual, violent, or neutral word) appeared on the computer screen and Probe Position was where the dot probe appeared on the computer screen. The significance level for all tests was $p < .05$. Correlation analyses were also computed using STAI, BDI, SES, and sexual situations rating scale scores, results from the ADIS-IV interview, and dot probe detection latencies.

Results

Participant Characteristics

This study included 86 participants who identified themselves as Caucasian, 22 identified as African-Americans, 8 Asian, 2 Native American, and 4 Other. A series of one-way ANOVAs were performed to determine if there were any demographic or characteristic differences between the trauma and control groups (see Table #1 for these results). There were no significant age differences between the trauma group and the control group. In addition, there was no significant difference in psychotropic medication use between the two groups. There was, however, a significant difference between groups on reported psychological treatment. Within the trauma group, 24 individuals reported having received psychological treatment while only 4 individuals in the control group had received psychological treatment. Within the trauma group, 54 of the participants reported having experienced actual physical force during the traumatic event, while 8 reported having experienced a threat of violence or force. The average length since experiencing a trauma for the trauma group was 5.48 years.

Other significant differences between the trauma and control groups were found. First, the trauma group had significantly higher scores on sexual situations anxiety rating scale than the control group. The trauma group also had higher scores on the BDI than the control group. Finally, the trauma group

had higher scores on the STAI, both the state and trait measure, than the control group.

Table #1:

Participant characteristics.

Characteristic/ Measure	Trauma Group	Control group	F	*p*
Age	22.52	20.78	3.00	*n.s.*
Psychological Treatment	n/a	n/a	19.41	<.0001
Medication Use	n/a	n/a	.52	*n.s.*
BDI	11.84	6.83	15.08	<.0001
STAI-state	52.20	48.00	7.86	<.006
STAI-trait	56.55	49.24	16.38	<.0001
Sexual Anxiety Rating Scale	12.34	9.10	12.27	<.0001
Current PTSD	0.73	0.14	9.55	<.002
Past PTSD	1.13	0.02	42.6	<.0001
Past Major Depression	1.10	0.30	7.91	<.006

The trauma and control groups differed on the number of symptoms they reported on the ADIS-IV. The trauma group reported more current PTSD symptoms and more past PTSD symptoms than the control group. However, only four individuals in the trauma group met criteria to actually be diagnosed with current PTSD. The trauma group also reported more past Major Depression symptoms than the control group. The two groups did not differ on

Panic symptoms, Agoraphobia, Social Phobia, Generalized Anxiety Disorder, Obsessive Compulsive Disorder, Specific Phobia, Acute Distress Disorder, current Major Depression symptoms, Alcohol Dependence, Substance Dependence, or Psychosis. No participants in the study endorsed symptoms of Dysthymia, Mania, Hypochondriasis, or Somatization Disorder.

Dot probe detection latency data for probes following sexual word pairs

To analyze the data for dot probe detection latencies for probes appearing after the presentation of word pairs containing sexual words, a repeated measure ANOVA was conducted with two within subject variables (Probe Position and Word Position) and two between subject variables (Condition and Group). The dependent variable was the appropriate mean dot probe detection latency for probes that followed word pairs containing sexual words. See Table #2 for the results from dot probe detection latency data. A significant main effect for Probe Position was found. Examination of means indicates that probes appearing in the upper portion of the computer screen (M=533.32 ms) had significantly shorter detection times than probes appearing in the lower portion (M=564.51 ms). A significant main effect for Word Position was also found. When the sexual word appeared in the upper portion of the screen, where the participants attention was focused, probe detection times were slower (M=594.82 ms) than when the sexual word appeared in the lower portion (M=503.01 ms).

Table #2

ANOVA results from dot probe detection latency data.

Sexual word pairs	F	N	*p*
Main Effects			
Word Position	8.14	81	<.006
Probe Position	205.34	81	<.0001
Interaction Effects			
Word Position X Probe Position	28.38	81	<.0001
Word Position X Probe Position X Condition	10.99	81	<.001
Word Position X Probe Position X Group	0.05	81	.858
Word Position X Probe Position X Condition X Group	0.01	81	.922
Violent word pairs			
Main Effects			
Word Position	8.7	82	<.004
Probe Position	0.35	82	.556
Interaction Effects			
Word Position X Probe Position	8.9	82	<.004
Word Position X Probe Position X Condition	0.69	82	.409
Word Position X Probe Position X Group	1.77	82	.188
Word Position X Probe Position X Condition X Group	0.01	82	.917

(Table #2 continued)

Neutral word pairs			
Main Effects			
Word Position	26.85	122	<.0001
Probe Position	14855.25	122	<.0001
Interaction Effects			
Word Position X Probe Position	9.19	122	<.0001
Word Position X Probe Position X Condition	0.10	122	.906
Word Position X Probe Position X Group	0.28	122	.598
Word Position X Probe Position X Condition X Group	0.08	122	.921

A statistically significant Probe Position X Word Position interaction was found for probes appearing after the sexual words. Means analysis indicates that probes appearing in the upper area were detected *slower* when preceded by a sexual word in the upper area (569.64 ms) rather than when the sexual word appeared in the lower area [497 ms; $t(1,80)=3.71$, $p<.0001$]. This result is interesting given that participants were instructed to attend to the upper portion of the screen and were faster overall to detect probes that appeared in the upper portion of the screen. However, when a sexual word appeared in the upper portion of the screen, participants were slower to detect the probe when it followed the sexual word. Probes appearing in the lower area were detected slower when the sexual word was seen in the upper area (620 ms) than when

the word appeared in the lower area [509.02 ms; t(1,80)=-4.15, $p<.0001$]. See Figure #1 for a graphic presentation of the data relevant to this interaction. A significant Probe Position X Word Position X Condition interaction was also found. This interaction is complex and was examined by t-tests of the means. First, when participants viewed the probe in the lower portion of the screen, regardless of where the target sexual word appeared, those who were in Condition 3 (sexual, violent, and neutral words) were slower to respond (M=611.4 ms) than individuals in Condition 1 (M=516.45 ms) who were only seeing sexual and neutral words [t(1,79)=-2.17, $p<.033$]. Second, word position also played a role. When the sexual word appeared in the upper portion of the screen, participants in Condition 1, who were seeing sexual and neutral words, were faster to detect the probe, regardless of whether it appeared in the upper or lower position (M=529.59 ms), than the individuals in Condition 3, who were seeing sexual, violent, and neutral words (M=658.46 ms), [t(1,79)=-2.39, $p<.019$]. Finally, it was found that when the target sexual word appeared in the upper position and the probe appeared in the lower position, participants in Condition 3 were much slower to respond (M=702.63 ms) than participants in Condition 1 [M=535.3 ms; t(1,79)=-2.72, $p<.0008$]. See Figure #2 for a graphic presentation of the data relevant to the interaction in Condition 1 and Figure #3 for a graphic presentation of the data relevant to the interaction in Condition 3. In general, the mean dot probe detection latencies were slower in Condition 3 where the participants were seeing sexual, violent, and neutral words.

The statistically significant differences between those means are stated above.

See Table #3 for mean probe detection latencies.

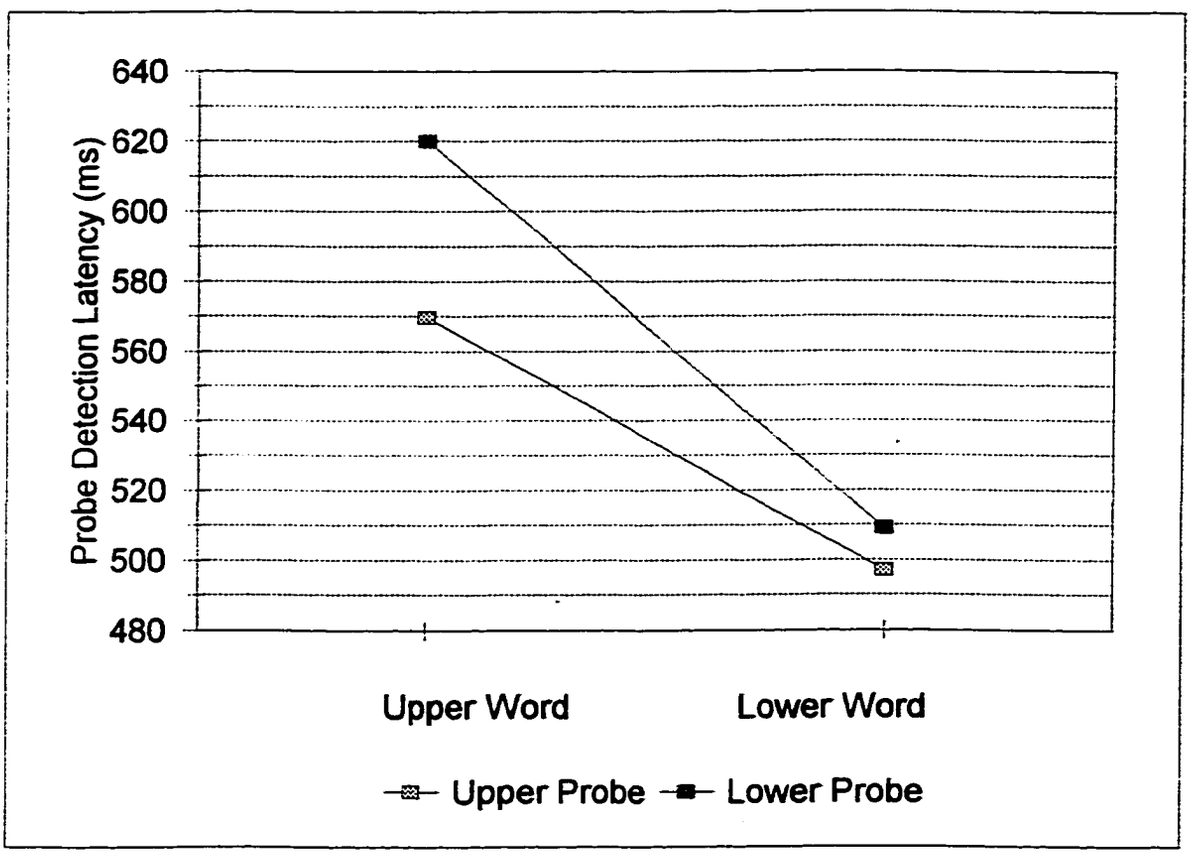

Figure #1

The Probe Position by Word Position interaction for probes appearing after word pairs containing sexual words.

Table #3

Mean probe detection latencies for probes following sexual words in milliseconds.

Condition/area of probe detection latency	Target word in upper area	Target word in lower area
Condition 1 (sexual and neutral words)		
Probe in upper area	523.89 ms	495.19 ms
Probe in lower area	535.30 ms	497.60 ms
Condition 3 (sexual, violent, and neutral words)		
Probe in upper area	614.28 ms	498.77 ms
Probe in lower area	702.63 ms	520.17 ms

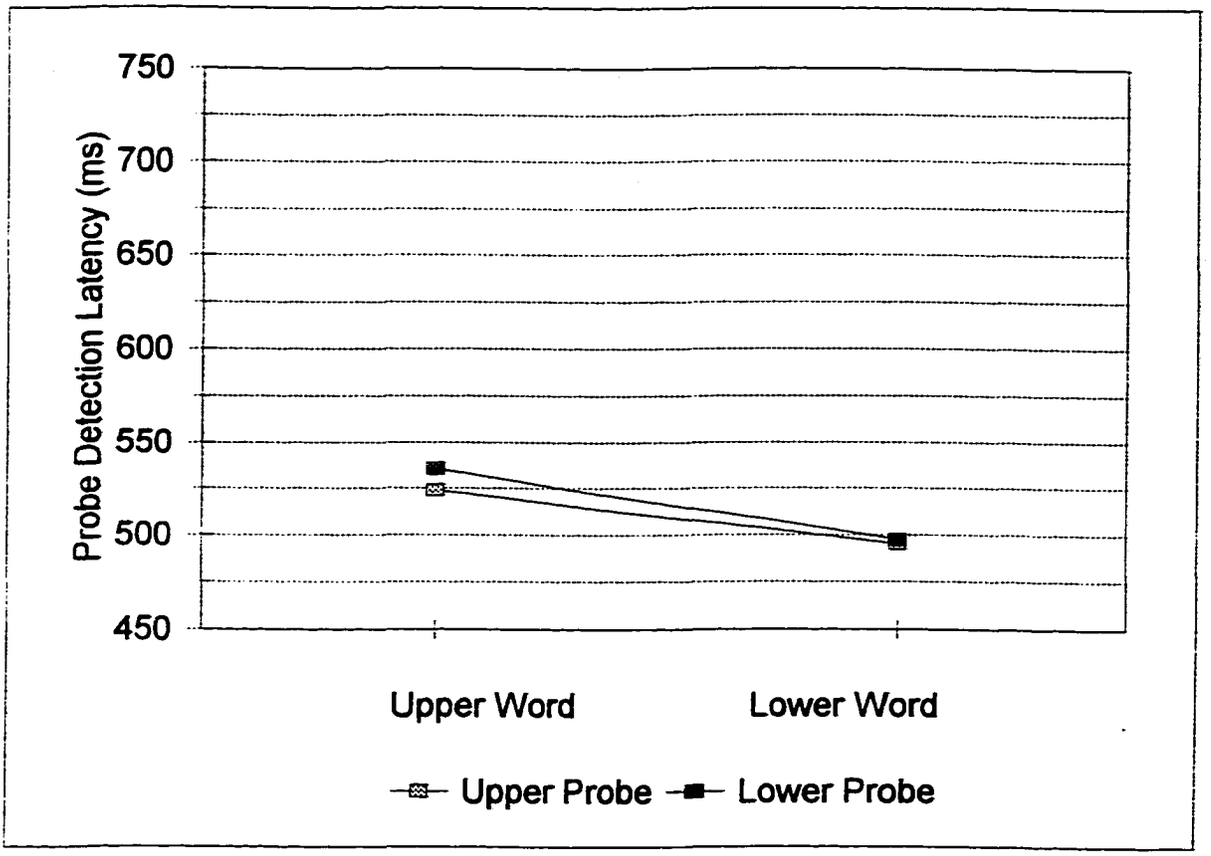

Figure #2

The Probe Position by Word Position By Condition interaction for probes appearing after word pairs containing sexual words in Condition 1.

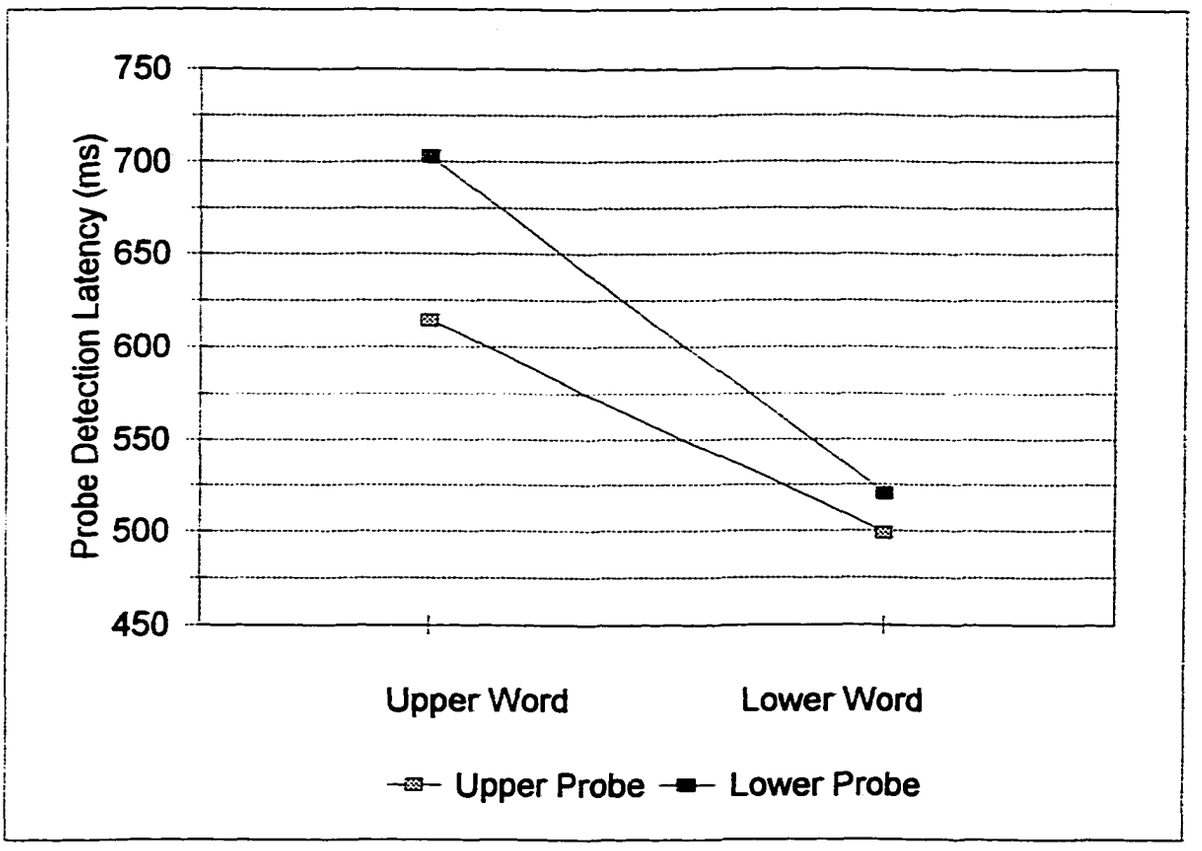

Figure #3

The Probe Position by Word Position By Condition interaction for probes appearing after word pairs containing sexual words in Condition 3.

To further analyze data from dot probes following word pairs that contain sexual words, a series of t-tests were performed comparing dot probe detection latencies for probes following sexual words and probes following neutral words. Results indicate that participants were slower to respond to dot probes (either in the upper or lower position) that followed sexual words than if they followed a target neutral word, [$t(1,80)=4.38$, $p<.0001$; $t(1,80)=2.66$, $p<.009$, respectively]. In addition, analysis indicates that when the target word was in the upper position, participants were slower to respond to probes following sexual words than probes following neutral words [$t(1,80)=5.69$, $p<.0001$]. See Table #4 for mean probe detection latencies for sexual and neutral words.

Table #4

Mean probe detection latencies for probes following sexual and neutral words in milliseconds.

	Probe - Upper	Probe-Lower	Word - Upper	Word - Lower
Sexual words	533.32 ms	564.51 ms	594.82 ms	503.01 ms
Neutral words	480.86 ms	532.63 ms	498.19 ms	515.30 ms

Dot probe detection latency data for probes following violent word pairs

A repeated measures ANOVA was used to analyze the dot probe detection latencies for probes following word pairs containing violent words. As with the analyses of sexual words analysis, there were two within subject variables (Probe Position and Word Position) and two between subject variables (Group and Condition). The dependent variable was dot probe

detection latencies for probes following word pairs containing violent words. Findings are presented in Table #2. A significant main effect for Word Position was found. Analysis indicates that when a violent word appeared in the upper portion of the screen, participants were *slower* to respond to the dot probe (M=582.62 ms) than when the violent word appeared in the lower portion of the screen (M=527.51 ms). However, Probe Position was not found to be significant as it was in the analyses of data from sexual words.

A statistically significant Probe Position X Word Position interaction was found for violent words. When the violent word appeared in the upper position and the probe also appeared in the upper position, participants were *slower* to respond (M=606.22 ms) than when the word appeared in the lower position and the probe appeared in the upper position [M=512.03 ms; $t(1,81)=5.03$, $p<.0001$]. This result is identical to the result found with regard to dot probe detection data from probes following sexual words. In contrast to the findings from sexual words, no difference was found when both word and probe appeared in the lower position (M=542.99 ms) and when the probe appeared in the lower position and the word appeared in the upper position [M=559.02 ms; $t(1,81)=-1.25$, *ns*]. See Table #5 and Figure #4 to view a graphic presentation of the data relevant to this interaction.

To further explore the data from dot probes following word pairs containing violent words, a series of t-tests were performed comparing violent words and neutral words. Means analysis indicates that participants were

Table #5

Mean probe detection latencies for probes following violent words in milliseconds.

Area of probe detection latency	Target word in upper area	Target word in lower area
Probe in upper area	606.22 ms	512.03 ms
Probe in lower area	559.02 ms	542.99 ms

slower to respond to dot probes appearing in the upper position of the screen if the probe followed a violent word (M=559.12 ms) than if the probe followed a neutral word [M=504.96 ms, t(1,81)=5.39, $p<.0001$]. In addition, participants were slower to respond to probes if a violent word appeared in the upper position (M=582.62 ms) than if a neutral word appeared in the upper portion of the screen [M=519.3 ms, t(1,81)=5.9, $p<.0001$].

Dot probe detection latency data for probes following target neutral word pairs

A repeated measures ANOVA was performed to analyze the data from dot probes following neutral word pairs, one of which had been designated a target neutral word. This ANOVA contained two within subject variables (Probe Position and Word Position) and two between subject variables (Condition and Group). Recall that Condition is an independent variable because not all participants were presented with the same word types. Some individuals saw sexual and neutral word pairs, some saw violent and neutral word pairs, and some who saw all three word types. Again, the dependent variable was dot probe detection latencies for probes following neutral word pairs, one of which

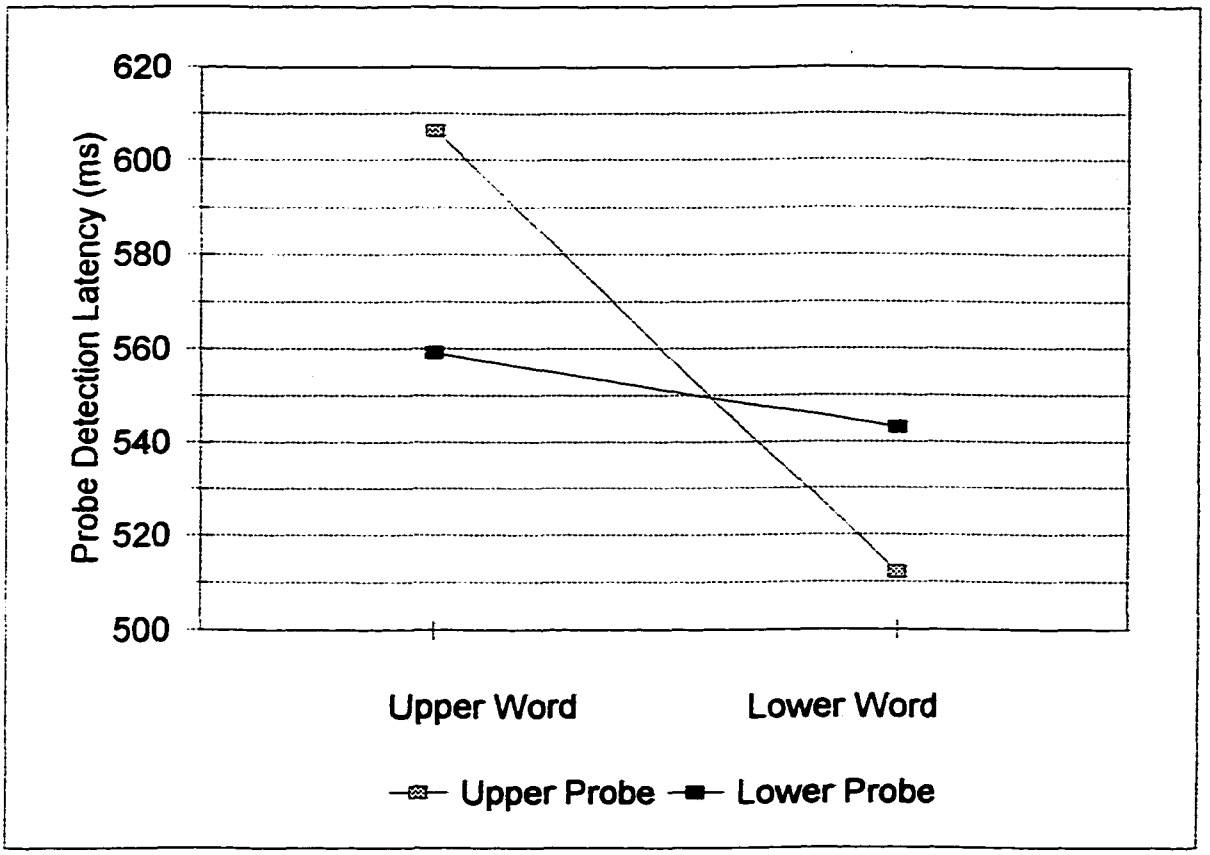

Figure #4

The Probe Position by Word Position Interaction for probes appearing after word pairs containing violent words.

was designated a target. See Table #2 for the results from these analyses. A main effect of Probe Position was found. Analysis indicates that participants were faster to detect dot probes that appeared in the upper portion of the screen (M=492.37 ms) than those appearing in the lower portion of the screen (M=537.15 ms). A main effect for Word Position was also found. The means indicate that when the target neutral word appeared in the upper position, participants were faster to detect a probe (M=507.48 ms) than when the target neutral word appeared in the lower position (M=521.67 ms). Note that the direction of the main effect for Word Position for neutral words was in direct contrast with the direction of the main effects for Word Position for sexual and violent words. When the target neutral word appeared in the upper position, participants were faster to detect the dot probe than if the target word appeared in the lower position. Data from dot probes following sexual and violent word pairs indicate that when the target sexual or violent word appeared in the upper position, participants were *slower* to respond to dot probes following the words than if the target words appeared in the lower position.

The main effects described for neutral words are modified by a Probe Position X Word Position interaction. Means analysis indicates that when the target neutral word appeared in the upper position and the probe appeared in the lower position, participants were slower to respond (M=520.77 ms) than when both probe and word appeared in the same spatial location, the upper portion of the screen [M=494.18 ms; $t(1,121) = -2.71$, $p<.008$]. In addition,

when both the target neutral word and the probe appeared in the lower position, participants were slower to respond (M=553.1 ms) than when the probe appeared in the upper position, and the target word appeared in the lower position [M=490.24 ms; t(1,121)=4.95, $p<.0001$]. See Table #6 for mean dot probe detection latencies and Figure #5 for a graphic presentation of the data relevant to this interaction.

Table #6

Mean probe detection latencies for probes following neutral word pairs in milliseconds.

Area of probe detection latency	Target word in upper area	Target word in lower area
Probe in upper area	494.18 ms	490.24 ms
Probe in lower area	520.77 ms	553.10 ms

Finally, a Probe Position X Group interaction was found, $F(1,116)=8.16$, $p<.005$. Means analysis indicates that individuals in the trauma group were faster to detect the probes following target neutral word pairs, regardless of position, than the control group. When probes appeared in the upper portion of the screen the trauma group was faster (M=482.97 ms) than the control group (M=501.76 ms) but this difference was not significant. The same result was found when the probe appeared in the lower position. The trauma group's mean was 523.94 ms while the control group's mean was 550.36 ms but again, this difference was not significant. Means analysis failed to help clarify the interaction. The nature of this interaction is viewed to be uninterpretable.

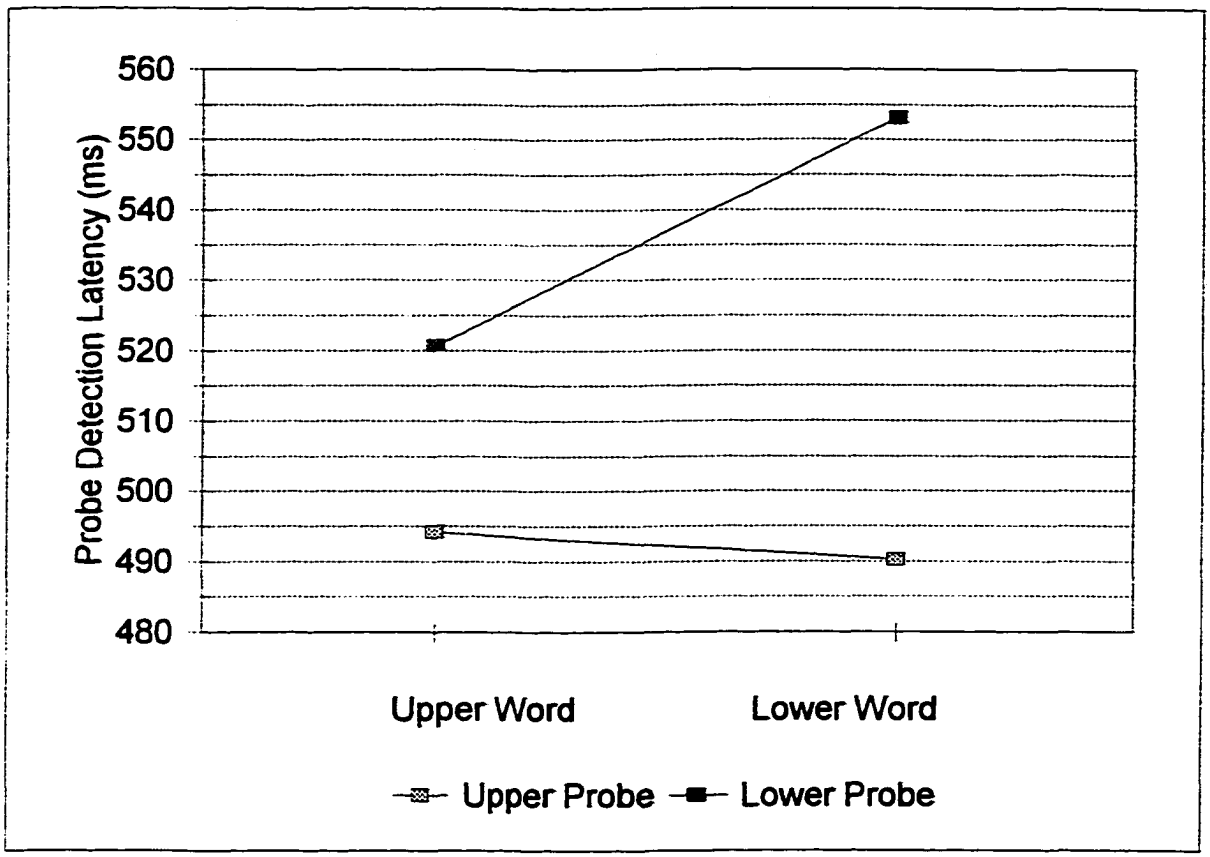

Figure #5

The Probe Position by Word Position Interaction for probes appearing after word pairs containing neutral words.

To summarize the data from the dot detection task, main effects were found for Word Position for all three word types (sexual, violent, and neutral). However these main effects differed by word type. For sexual and violent words, if the target word appeared in the upper portion of the screen, participants were *slower* to detect the dot probe following the word than if the target word appeared in the lower portion of the screen. In contrast, when a neutral word appeared in the upper portion of the screen, participants were *faster* to detect a dot probe following the target word than when target neutral words appeared in the lower position. Main effects for Probe Position were found for probes appearing following sexual and target neutral word pairs. Analysis indicated that for these two word types, if the dot probe appeared in the upper portion of the screen, where participants' attention was focused, participants were faster to detect and respond to the probe than if the probe appeared in the lower portion of the screen. A main effect for Probe Position from violent word pairs was not found.

There were several interaction effects noted. First, there was a Probe Position X Word Position interaction found for all three word types. For the sexual and violent word pairs, it was found that if the target word and probe were both seen in the upper portion of the screen, participants were slower to respond to a dot probe following those words than if the target sexual or violent word was seen in the lower position and the probe was in the upper position. The interaction was more complicated when considering the neutral words. In

general, participants were slower to respond to probes seen in the lower position. When the target neutral word appeared in the upper position of the screen and the dot probe also appeared in the upper portion, participants were slower than if the target word appeared in the lower area and the dot probe appeared in the upper area.

A Probe Position X Word Position X Condition interaction was found for probe detection latencies for probes following sexual word pairs. In general, those participants who were in Condition 3 (who saw sexual, violent, and neutral words) were slower to detect dot probes in the lower position than those in Condition 1 (who saw only sexual and neutral words). In addition, when the sexual word appeared in the upper portion of the screen, individuals in Condition 3 were slower to detect dot probes following those words than the individuals in Condition 1. Finally, it was found that if the target sexual word appeared in the upper position and the probe appeared in the lower position, participants in Condition 3 were slower to respond than those in Condition 1.

Finally, t-test analyses were done to compare results from dot probe detection latencies for probes following sexual and violent word pairs and for probes following target neutral word pairs. In general, it was found that if dot probes followed sexual and violent word pairs, participants had significantly slower reaction times than if the dot probes followed target neutral word pairs. This was the case when considering both probe and word position for dot probes following sexual and neutral words - participants were slower to respond

to dot probes following sexual words. The data from probes following violent words were not as clear cut. It was found that if a violent word appeared in the upper portion of the screen, participants were slower to respond to dot probes than if a target neutral word appeared in the upper portion of the screen. In addition, if the dot probe appeared in the upper portion of the screen, participants were slower to respond to it if it followed a violent word as compared to a target neutral word. These results point to a possible emotional effect of the sexual and violent words that is discussed later in the text.

Correlational Analyses

Several correlational analyses were performed to further explore the data. Correlations were computed to determine if any relationships existed between the scores found on the BDI, STAI, and sexual situations rating scale. A large number of significant correlations were found, some of which could be the result of the large number of correlations that were computed. The potential presence of experimentwise error indicated that the level of statistical significance should be increased from the standard level of $p<.05$ to evaluate the results. Thus, only correlations that exceeded a level of $p<.01$ will be reported. Findings are presented in Table #7. It was found that the scores for STAI-state and STAI-trait were positively correlated which is to be expected as they are different parts of the same measure and are measuring related levels of anxiety. It was also found that both scores for the STAI (state and trait) were positively correlated with scores from the BDI. This indicates that as the scores

on the BDI increase, indicating more depressive symptoms, scores on the STAI also increase. This result is a replication of previous research that has found positive correlations between BDI scores and STAI scores (Dobson, 1985; Tanaka-Matsumi & Kameoka, 1986; Endler, Cox, Parker, & Bagby, 1992). In addition, scores on the measure of sexual anxiety positively correlated with both STAI (state and trait) scores and BDI scores. This result indicates that as level of reported sexual anxiety increased so did the levels of reported state and trait anxiety and level of depressive symptoms.

Table #7

Correlations between the STAI, BDI, and Sexual Anxiety Rating Scale.

	STAI-state	STAI-trait	BDI	Sexual Anxiety Rating Scale
STAI-state	r=1.000			
STAI-trait	r=.797 p<.0001	r=1.000		
BDI	r=.718 p<.0001	r=.831 p<.0001	r=1.000	
Sexual Anxiety Rating Scale	r=.418 p<.0001	r=.460 p<.0001	r=.378 p<.0001	r=1.000

Correlational analyses were also conducted on data from the sexual trauma group to examine if the variables of level of violence experienced, whether or not intercourse had been completed, the reported impact of the trauma, the number of years since the trauma had occurred, and the number of times a trauma had occurred within the trauma group were correlated with the

scores found on the BDI, STAI, and the sexual anxiety scale. It was found positive correlations between the occurrence of completed intercourse and current and past PTSD symptoms ($r=.375$, $p<.003$; $r=.365$, $p<.014$, respectively). This indicates that if the trauma included intercourse (either vaginal, oral, or anal), the participants reported more symptoms of PTSD, both past and present. Analysis did not find any correlations between level of reported violence during the trauma and any of the measures of depression and anxiety. There was a negative correlation between reported violence and the BDI that approached but did not reach statistical significance ($r=-.224$, $p<.08$). A negative correlation between the variable of time elapsed since trauma and the sexual anxiety scale was found ($r=-.366$, $p<.004$). This indicates that the less time that has elapsed since the trauma, the more depressive symptoms and sexual anxiety the individual reports and vice versa. Analysis did not reveal any significant correlations between the reported number of times that a trauma occurred and the measures of depression and anxiety, indicating that for this sample, the number of times a trauma occurred did not significantly impact anxiety or depression symptoms. There was no significant relationship between the measures and the age of the individual when she experienced the sexual trauma. Correlational analyses designed to explore whether the measures of depression, anxiety, and trauma were correlated to levels of psychological symptoms by group were performed. The results indicate that these measures were correlated with two of the psychiatric diagnoses for the

trauma group. Generalized anxiety disorder symptoms were positively correlated with trait anxiety and with the BDI. Alcohol use was positively correlated with trait anxiety and the BDI. No significant correlations between the measures and the other psychiatric diagnoses were found. Table #8 presents the results of these analyses.

Table #8

Correlations between measures of depression, anxiety, and sexual anxiety and level of psychological symptoms for the trauma group.

Diagnosis	STAI-state	STAI-trait	BDI	Sexual Anxiety Scale
Generalized Anxiety Disorder	r=.256 *ns*	r=.336 p<.008	r=.402 p<.001	r=.22 *ns*
Alcohol Use	r=.177 *ns*	r=.271 *ns*	r=.346 p<.006	r=.143 *ns*

Correlational analyses between the measures of anxiety and depression and the symptoms of psychiatric diagnoses were also conducted for the control group. Positive correlations between state and trait anxiety, the BDI, and symptoms of panic disorder were found. This indicates that as the number of panic disorder symptoms increased, so did scores on the measures of anxiety and depression. Analyses also revealed similar positive correlations between the measures of anxiety and depression and social phobia, generalized anxiety disorder, obsessive compulsive disorder, and current major depression symptoms. No other significant correlations between the measures and psychiatric symptoms were found. Findings are presented in Table #9.

Table #9

Correlations between measures of depression and anxiety and level of psychological symptoms for the control group.

Diagnosis	STAI-state	STAI-trait	BDI
Panic Disorder	*r*=.329 p<.011	*r*=.395 p<.002	r=.684 p<.0001
Social Phobia	*r*=.379 p<.003	r=.51 p<.0001	r=.65 p<.0001
Generalized Anxiety Disorder	*r*=.544 p<.0001	*r*=.558 p<.0001	*r*=.532 p<.0001
Obsessive Compulsive Disorder	*r*=.335 p<.009	r=.378 p<.003	r=.66 p<.0001
Major Depression - present	*r*=.335 p<.009	*r*=.378 p<.003	*r*=.66 p<.0001

Hypotheses

1. Participants will have shorter detection latencies for probes appearing in the upper portion of the computer screen. This hypothesis was supported as participants had shorter dot detection latencies for probes appearing in the upper portion of the screen ($t(1,121) = -3.08$, $p<.003$). The mean dot probe detection latency for probes appearing in the upper portion was 521.58 ms and for probes in the lower portion was 545.89 ms. This result was predicted as participants were instructed to read the word in the upper portion of the screen, thereby focusing their attention in that location. This is consistent with previous research using the dot probe task (MacLeod et al., 1986; Asmundson & Stein, 1994). Simply put, participants complied with the instructions to focus their

attention on the upper word of the word pair and were therefore able to detect probes that appeared in the upper portion of the screen faster

2. The sexual trauma group will have longer probe detection latencies than the control group regardless of target word type. This prediction is based on previous research (MacLeod et al., 1986; Asmundson & Stein, 1994) using the dot-probe task that found that anxious groups tended to be slower in response to the probe than the control participants. It has been suggested that this occurs because of the loss of attentional capacity that has been observed in anxious individuals. Since it is assumed that individuals with a history of sexual trauma will have higher levels of anxiety, it is expected they would respond in similar ways to individuals with anxiety disorders when compared to individuals without such a sexual trauma history.

This hypothesis was not supported by the data ($F(1,121)=1.07$, *ns*). There was no statistically significant difference between probe detection latencies for the two groups.

3. When both word and probe appear in the same spatial location, it is predicted that participants will have faster probe detection times when the dot probe replaces the sexual words when they are presented alone than for violent words presented alone. This hypothesis is based on previous research that has indicated that sexual stimuli are "attention-grabbing" or salient (Neilson & Sarason, 1981; Lewis, Gibbons, & Gerrard, 1986; Kirsch-Rosenkrantz & Geer, 1991). These studies employed a variety of research paradigms and found that

sexual stimuli were associated with shadowing errors and increased recall. The authors suggest that sexual information appears to be more noticeable than other types of information and therefore contributes to the effects described. If sexual stimuli are more salient, more cognitive operations will be taken up in the processing of such stimuli. One of the results of such processing may be measured in selective attention and reaction time. If an individual's attention is caught by a sexual word, she will probably be more likely to react faster to the dot probe if it follows such a word.

The data did not support this hypothesis ($F(1,80)=3.29$, *ns*). There was no significant difference in dot detection latencies for probes replacing sexual words presented alone and probes replacing violent words presented alone. The mean dot probe detection latency for probes following sexual words presented alone was 510.74 ms and for violent words was 577.58 ms.

4. The sexual trauma group will have faster detection latencies for the dot probes following violent words in the combined condition (sexual, violent, and neutral words) when both the word and the probe appear in the same portion of the screen, as compared to violent words presented with only neutral words. In other words, when the dot probe replaces the target word, individuals in the sexual trauma group will respond faster to dot probes replacing violent words in the combination condition than the condition in which violent words are presented with only neutral words, without a sexual context.

This prediction is based on Bower's (1981) and Beck et al.'s, (1985) theories. Beck et al. (1985) would predict that an individual who has suffered a sexual trauma would probably develop danger schemata regarding sexually traumatic stimuli. Therefore, these individuals would perceive and respond to sexually threatening information faster than non-threatening information. When such individuals are given violent material in a sexual context, this would supposedly activate their danger schemata resulting in shorter probe detection times for the violent words (attentional capture). In addition, Bower's theory (1981) would be consistent with the prediction that faster detection of the probe could occur due to mood congruent and perceptual effects. He suggests that people tend to selectively perceive and attend to information that is congruent with their current emotional status. If individuals are anxious about sexual trauma, they will respond to congruent information (i.e., violent words in a sexual context) faster than information that is not threatening.

The data did not support this hypothesis, $F(1,39)=.266$, *ns*. Adding a violent context to sexual words did not contribute to a slowing effect to the probes following violent word pairs in the trauma group. The mean detection time for probes replacing violent words alone was 553.88 ms and for probes replacing violent words in the combination condition was 559.64 ms.

5. Individuals in the sexual trauma group will have faster dot probe detection times for the sexual words in the combination condition (when both word and probe appear in the same spatial location) than when the sexual

words are presented alone. As in Hypothesis #3, when dot probe replaces the target word in the combination condition, participants will respond faster to the probe than in the sexual word alone condition.

This hypothesis is again based on the theories of Beck et al. (1985) and Bower (1981). As discussed in the previous hypothesis, Beck et al.'s (1985) idea of danger schemata would be consistent with the hypothesis that an individual with a history of sexual trauma would be more "sensitive" to sexual information within a violent context. This effect would be explained by Beck et al. (1985) as an activation of danger schemata that are congruent with the sexual trauma of the individual and might lead to perceptual differences with regard to congruent information (attentional capture). Bower's (1981) proposed mood congruence and perceptual effects would also be consistent with Hypothesis #4. He suggests that individuals who are anxious about sexually traumatic situations are more likely to selectively attend to and process information that is congruent with their emotional state. This type of cognitive set could lead to increased vigilance for sexually traumatic information and faster detection times in response to sexual information in a violent context.

This hypothesis was not supported by the data, $t(1,38)=-.516$, *ns*. The mean dot probe detection latency for probes replacing sexual words in Condition 1 (sexual and neutral words) was M=499.98 ms. The mean dot probe detection latency for probes replacing sexual words in Condition 3 (sexual, violent, and neutral words) was M=529.05 ms.

6. The sexual trauma group will have faster dot probe detection times for the sexual words alone when compared to violent words alone. Again, this is predicted when both word and probe appear in the same spatial location. As before, this hypothesis is based on Beck et al.'s (1985) and Bower's (1981) theories. Both theories would predict that individuals with a sexual trauma in their background would have some anxiety regarding sexual situations in general. Anxiety regarding sexual issues might lead to selective processing and attention to information congruent with the sexual concerns. Previous research has found content-specific attentional affects similar to the hypothesis suggested (Asmundson & Stein, 1994; Mathews & MacLeod, 1985; Ehlers et al., 1988; McNally et al., 1990; Watts et al., 1986; McNally et al., 1991). This idea is also supported by the frequent occurrence of sexual dysfunction found in individuals who have been sexually traumatized (Roesler & McKenzie, 1994; Mancini et al., 1995). This effect seems to indicate that individuals who have experienced a sexual trauma have lasting effects of the trauma which often includes anxiety about sexual situations.

This hypothesis was not supported by the data ($F(1,41)=1.72$, *ns*). The mean for sexual words presented alone was M=499.98 ms and for violent words presented alone was 553.87 ms. Again, there is no difference between these two means and the sexual trauma group did not differ in their dot detection latencies for probes appearing after sexual words presented alone and violent words presented alone.

7. It is predicted that the level of violence experienced by an individual with a history of sexual trauma will correlate negatively with dot probe detection times in the combination condition. The theory proposed by Beck et al. (1985) would support this hypothesis based on his idea of danger schemata. If a woman experiences a sexual trauma that includes a high level of violence, it would be assumed that she would develop danger schema that involves not only sexual situations, but violent situations as well. When this individual is presented with violent information in a sexual context, Beck et al. (1985) would predict that her danger schema would be activated which could influence the perception and encoding of threat-related information. An individual who has not experienced a high level of violence would not have as highly a developed danger schemata for violent sexual situations and might not exhibit perceptual differences for violent stimuli. Therefore the level of violence experienced by an individual might have an influence on her response to violent material presented in a sexual context.

This hypothesis would also be predicted by Bower's (1981) theory of emotion. He suggests mood congruency and perceptual effects influence information processing. In other words, people who are in a particular affective state might tend to selectively attend to and perceive information that is congruent with their mood state. If an individual is anxious about sexually violent situations due to past experience, she would be more likely to attend to and perceive stimuli that is sexually violent in nature. If this occurs, it could lead

to potentially faster detection times. In addition, it has been shown by previous research (Beitchman et al., 1992; Briere & Runtz, 1988; Wayland et al., 1991; Roesler & MacKenzie, 1994; Mancini et al., 1995) that more severe levels of personal violence results in greater anxiety, which could augment mood congruent and perceptual effects even more.

Results indicate that level of violence did not correlate significantly with dot probe latencies in the combination condition (r=.157, *ns*). There was no significant relationship found between level of violence experienced by individuals in the sexual trauma group and dot probe detection latencies for probes following sexual and violent word pairs in the combination condition.

8. It is predicted that the sexual trauma group will have higher state anxiety and depression scores than the control group. This hypothesis is based on previous research that found that individuals who have suffered a sexual trauma tend to exhibit greater levels of emotional disturbance such as anxiety and depression than individuals without a history of sexual trauma (Kinzl & Beibl, 1992; Briere & Runtz, 1988; Mancini et al., 1995; Roesler & McKenzie, 1994).

This hypothesis was supported by the data. As stated above, the trauma group had significantly higher scores on the BDI than the control group ($F(1,121)=15.08$, $p<.0001$). The trauma group also had higher scores on the STAI, both the state and trait measure, than the control group (state -

$F(1,119)=7.86$, $p<.006$; trait - $F(1,120)=16.38$, $p<.0001$). See Table #1 for the mean scores on these measures for each group.

9. It is predicted that within the sexual trauma group higher state anxiety scores will be negatively correlated with dot probe detection latencies for probes following sexual and violent word pairs in the combination word condition. In other words, those individuals who report more state anxiety will be faster at detecting the dot probe when it follows a target word (i.e., sexual or violent) in the combination condition than those with lower anxiety scores. This hypothesis is based on past research (MacLeod et al., 1986; MacLeod & Mathews, 1988) that found that individuals with high anxiety scores tended to move attention towards threat words whereas those with low anxiety scores tended to shift attention away from threatening stimuli. In addition, research using the Stroop color-naming task found that individuals with high levels of anxiety took longer to name the color of threatening words relative to neutral words (Mogg et al., 1990; Fox, 1993). This indicates that the individuals in those studies were unable to ignore distracting elements of the stimuli which is assumed to occur because of the anxiety level of the participants.

This hypothesis is also consistent with the theories proposed by Bower (1981) and Beck et al. (1985). As discussed previously, it is suggested that individuals who have suffered a sexual trauma are likely to experience anxiety about such situations and will develop certain cognitive strategies for dealing with anxiety and threatening stimuli. Beck et al.'s (1985) danger schemata and

Bower's (1981) ideas of mood congruence and perceptual effects are consistent with the idea that individuals suffering from anxiety due to sexual trauma would respond faster to content-specific threatening stimuli (i.e., sexual words in a violent context and vice versa) than those individuals who do not have a history of sexual trauma. This idea could be taken even further to suggest that greater levels of anxiety will produce stronger effects regarding Beck et al.'s (1985) and Bower's (1981) theories. In other words, it can be suggested that the more anxiety an individual suffers regarding a certain situation, the more activated her danger schemata are. In addition, more selective attention and processing will occur with regard to anxiety-producing stimuli. If this occurs, Beck et al.'s (1985) and Bower's (1981) theories would be consistent with higher anxiety levels being correlated with faster probe detection latencies.

This hypothesis was not supported by the data. A negative correlation was not found between state anxiety scores and dot probe detection latencies for probes following sexual and violent words in the combination condition (r=.262, *ns*). This suggests that state anxiety did not play a role in dot probe detection latencies for probes following sexual and violent words in the combination condition.

Discussion

This study investigated whether individuals with a sexual trauma in their background would respond differently when presented with sexual, violent, and neutral words when compared to individuals without a such a background. Using the dot probe detection task to measure attention deployment, this study attempted to determine if victims of sexual trauma selectively attended to threatening information as has been found in previous research on anxiety (MacLeod & Mathews, 1988; MacLeod et al., 1986; Mogg et al., 1995).

Analysis revealed that the trauma and control groups differed in a variety of ways. First, the trauma group reported more anxiety and depression than the control group, as evidenced by higher scores on the BDI and STAI. This is a replication of other research that has found similar results (Kinzl & Biebl, 1992; Briere & Runtz, 1988; Mancini et al., 1995; Roesler & McKenzie, 1994; Wayland et al., 1991). Although this difference was found between BDI scores for the trauma and control groups, the mean scores for both groups were not clinically significant. The control group had a mean score of 6.83 on the BDI and the trauma group had a mean score of 11.84. Scores that fall below 10 are considered normal and scores that are 20 or higher are considered moderately depressed. Therefore, a score of 6.83 is normal and a score of 11.84 is slightly elevated but not clinically significant.

The same type of result was found concerning the scores from the STAI. Once more, the trauma group reported significantly more state and trait anxiety

than the control group, but the actual levels of anxiety were not clinically significant. The mean score for the trauma group on the STAI-state was 52.2 and for the STAI-trait it was 56.55. Both of these scores fall within the "normal" range for this measure. The scores from the trauma group, although significantly greater than the control group, still did not fall into an abnormally high range. The lack of clinically significant scores on the BDI and STAI may be the result of using what are assumed to be well-functioning college students as participants. It might be that they have adapted to whatever trauma they have suffered and therefore do not show the more severe effects of other, less-well-functioning women.

In addition to the results from the BDI and STAI, it was found that the individuals in the trauma group reported more anxiety concerning sexual situations and had a higher incidence of receiving psychological treatment than the control group. Several studies (Resick, 1993; Browne & Finkelor, 1986; Becker, Skinner, Abel, & Cichon, 1986; Miller, Williams, & Bernstein; 1982) have reported sexual dysfunction in populations of women who have suffered from rape, childhood sexual abuse, or sexual trauma. Unfortunately, none of these studies examined anxiety about sexual situations specifically. Intuitively it makes sense that anxiety concerning sexual situations is a contributing cause to the sexual dysfunction often found in these women. This is an issue to be explored by future research.

In an attempt to gain further knowledge about psychological symptoms of the participants, the ADIS-IV structured interview was administered to all who participated. The findings once again showed differences between the two groups. The trauma group reported more symptoms of past and present PTSD and more past Major Depressive symptoms than the control group. This is in line with previous research that found that victims of rape or other sexual trauma report significant PTSD symptoms (McLeer et al., 1988; Bownes, O'Gorman, & Sayers, 1990; Kilpatrick, Edmunds, & Seymour, 1992; Roesler & McKenzie, 1994). Many studies have also found higher levels of depression in sexual trauma populations (Browne & Finkelor, 1986; Brier & Runtz, 1988; Burnam et al., 1988; Resick, 1993; Kilpatrick et al., 1992; Roesler & McKenzie, 1994). Although the groups differed on past and present PTSD symptomatology, the average number of diagnostic criteria that the trauma group met for PTSD was only about one (past PTSD = 1.13; present PTSD=.726). This indicates that although the trauma group did report more symptoms of past and present PTSD, the number of symptoms they reported was not clinically significant. Perhaps the reason that the participants did not report more clinically significant PTSD symptoms is because they are again assumed to be fairly well-functioning college students. It is possible that they have been able to adapt to their traumatic experience without developing PTSD. The same can be said for the results regarding past Depression. The trauma group met an average of one (M=1.10) diagnostic criteria for past Major

Depression. Again, this was more than was reported by the control group (M=.30) but is not considered clinically significant. The groups did not differ on measures of several other psychological conditions including Panic Disorder, Social Phobia, and Obsessive Compulsive Disorder.

Further analyses were conducted to determine the relationships between scores on the BDI, STAI, and the measure of sexual anxiety. Analyses revealed there were positive correlations between all of the measures. These analyses indicated that if a participant reported higher levels of anxiety on the STAI, she also reported higher levels of depression and sexual anxiety and vice versa. Using separate analyses for the trauma group, correlations were done between the characteristics of the trauma (the level of reported violence during the trauma, the impact the trauma had on the participant, the age of the individual when they experienced the trauma, the number of years since the trauma had occured, and the number of times the person experienced a trauma) and the BDI, STAI, or sexual anxiety scale.

Analyses revealed significant positive correlations between the impact the individual reported the trauma had had on her life and the measures of STAI-trait and sexual anxiety. Intuitively, it makes sense that the more the event impacted, or was perceived as impacting, on the individual, the more sexual anxiety she might feel now. Previous research (Browne & Finkelor, 1986; Briere & Runtz, 1988; Bownes et al., 1990; Roesler & McKenzie, 1994) has found that several factors contribute to higher levels of psychopathology in

women who have been raped or sexually abused. These characteristics of the trauma include the number of abusers, use of force during the event, and completed intercourse. No studies have reported asking participants about the impact of the event on the victim's life and therefore, the results on this factor cannot be compared to previous research.

Positive correlations between the presence of completed intercourse during the traumatic experience and past and current PTSD symptoms were also found. As noted above, completed intercourse is one of the trauma characteristics that is associated with higher levels of later psychopathology (Browne & Finkelor, 1986; Briere & Runtz, 1988; Bownes et al., 1990; Roesler & McKenzie, 1994). Interestingly, the expected result that the greater the level of force used, the more symptomatology reported by the individual was not found. Analyses revealed no significant correlations with regard to level of violence experienced and the measures of anxiety and depression. This fails to replicate prior research (Browne & Finkelor, 1986; Briere & Runtz, 1988; Bownes et al., 1990; Roesler & McKenzie, 1994). This lack of results may again reflect the population of well-functioning college students that was used.

The analyses examined the role of elapsed time since the trauma and how that might have affected the participants' responses to the questionnaires. Negative correlations between the variable of time since the trauma and the measures of trait anxiety, depression, and sexual anxiety were found. This suggests that the longer it has been since the sexual trauma, the less trait

anxiety, depression, and sexual anxiety the participants report. The negative correlation between time since trauma and the measure of state anxiety approached significance but did not reach it. These results cautiously suggest an optimistic view of the long-term effects of trauma. It may be that the passage of time, among other things, dulls the effects of a traumatic experience or it may be the presence of sexuality that somehow modifies the recovery from the trauma.

Sexuality is essential to the continuance of the species. Studies have shown that the prevalence of sexual assault and child sexual abuse range anywhere from 12% to 50% in the general population (Beck & van der Kolk, 1987; Brown & Anderson, 1991; Russell, 1983; Feldman et al., 1991; Burman et al., 1988). What would happen if this 12% to 50% of individuals were not able to recover from the experience of sexual assault or abuse and continued to have crippling anxiety about sexual situations as a result? The future of the species would very likely be in danger as these individuals would likely not have children. Survival of the species suggests that it would be beneficial to species survival if individuals who have suffered a sexual trauma eventually recover from the effects. This perspective may describe why the passage of time seems to diminish anxiety and depression symptoms associated with sexual trauma. Sexual behaviors may be protected from fear conditioning as suggested by Seligman (1970) for other stimulus domains.

Results from the dependent variable of dot probe detection latencies indicate that the presence of an emotional word appears to create a delay in dot probe detection. This was found for both sexual and violent words. When an emotional word was present, dot probe detection latencies were slower than if only a neutral word was present. One explanation for this finding is related to the notion or concept of resource allocation.

The information processing approach assumes that attentional capacity, as well as all cognitive processes, is finite (Williams, Watts, MacLeod, & Mathews, 1997). Only a certain amount of information can be processed at one time. The concept of finite capacity leads to the idea that cognitive operations need resources to function (Kahneman, 1973; Roediger, Knight, & Kantowitz, 1977; Hasher & Zacks, 1979; Kahneman & Treisman, 1984) and that these resources are also limited. Processes that are relatively automatic take little of the fixed resources available, while novel or difficult tasks take more of the resources that are available. Perhaps emotional stimuli, such as sexual or violent words, require more resources to process. This may occur because of the presence of emotionality as compared to neutral words that lack emotional content. If this were the case, then emotional words would require more resources allocated to processing and would therefore take resources away from other tasks being performed. Research into the theory of limited resources has found that many factors affect distribution of resources including goal setting (DeShon, Brown, & Greenis; 1996); induced mood states

(Oaksford, Morris, Grainger, & Williams, 1996; Ellis, Thomas, & Rodriguez, 1984), and difficulty of task (Ellis et al., 1984). The emotional state of the individual has been found to influence how well the person is able to recall neutral information (Ellis et al., 1984) and how well the individual is able to reason (Oaksford et al., 1996). Emotion appears to play some role in resource allocation.

Christianson and Safer (1996) noted that normal individuals have a better memory for emotional events. Christianson and Loftus (1987) found that research participants noted more central details of emotional scenarios but more peripheral details of nonemotional material. Other research (MacLeod & Mathews, 1988; MacLeod et al., 1986; Mogg et al., 1995) has found that normal, nonanxious individuals respond to emotionally threatening information by shifting their attention *away* from such stimuli. Clearly, emotional material is processed differently than neutral information. The affective component of the sexual and violent words in this study may explain why the participants exhibited slower dot probe detection latencies to probes following emotional words when compared to probes following neutral words. The participants might have been using more cognitive resources in order to process the affective component of the sexual and violent words and therefore had less resources to use to detect the dot probe. Hence, reaction times to the probe were slowed. The theory of resource allocation can be applied to many of the results found in this study.

In addition to a general slowing in dot probe detection latencies for probes following sexual word pairs, this study also found a Condition effect with regard to sexual word pairs. Specifically, the analysis reveals that those individuals who were in Condition 3, in which they saw sexual, violent, and neutral words, were even slower to respond to dot probes than those individuals in Condition 1 who were seeing only sexual and neutral words. It appears that the addition of violent words to the sexual words created even more of a slowing effect for the participants. Again, the most logical explanation for this result is the resource allocation model (Kahneman, 1973; Roediger et al., 1977; Hasher & Zacks, 1979, Kahneman & Treisman, 1984) discussed above. The added emotional context of both violent and sexual words found in Condition 3 may have increased the need for resources to be allocated to process these emotional words. If increased resources were needed for this task, processing the affective component of the sexual and violent words, less resources would be available to detect the dot probe. This might lead to slower dot probe detection latencies for probes following word pairs containing emotional words.

This study did not find a Condition interaction with regard to data from violent word pairs as was found with sexual word pairs. Adding the sexual context to violent words (as compared to violent words seen only with neutral words) apparently did not produce a further slowing as it did when looking at sexual words in a violent context (again compared to seeing sexual and neutral words only). The reason for this is unclear. Perhaps seeing sexual words in a

violent context is more emotional than seeing violent words in a sexual context when compared to sexual and violent words alone. Sexual crimes are certainly not uncommon this society. Most women are at least marginally aware of the statistics that predict that they have a fairly good chance that they will suffer some type of sexual attack during their lifetime (Beck & van der Kolk, 1987; Brown & Anderson, 1991; Russell, 1983; Feldman et al., 1991). Seeing sexual words in a violent context may be more upsetting or salient than violent words in a sexual context when compared to violent and sexual words presented alone. Perhaps this difference in affective valence caused individuals to allocate more attention to the sexual words seen in a violent context. At this time, the answer to this question is unclear and calls for further research.

In the current study, significant correlations between characteristics of the trauma group and dot probe detection latencies were predicted. Specifically, it was suggested that the level of violence experienced by an individual during the traumatic event would correlate negatively with dot probe detection times in the most threatening condition, Condition 3. This prediction was derived from several sources. First, research (Beitchman et al., 1992; Briere & Runtz, 1988; Wayland et al., 1991; Roesler & MacKenzie, 1994; Mancini et al., 1995) has found that force during a sexual assault is a strong predictor of subsequent psychopathology. It has generally been found that the more force that is used, the more severe the psychological symptoms seen in the victim.

Second, the theories of Beck et al. (1985) and Bower (1981) would also predict this finding. Beck et al. (1985) put forth the idea of danger schemata in anxious individuals. These schemata affect the individual's perception of threat, making threatening stimuli more "salient" to the individual. Since it is known from previous research (Kinzl & Biebl, 1992; Briere & Runtz, 1988; Mancini et al., 1995; Roesler & McKenzie, 1994; Wayland et al., 1991) that individuals who have suffered a sexual trauma tend to exhibit more anxiety and sexual dysfunction, then it is assumed that they may have developed danger schemata with regard to sexual situations. The more violence these individuals suffered, the "stronger" the danger schemata, and the more effects the danger schemata will have on cognitive functioning. If this idea were true, then the danger schemata of the trauma group might manifest itself with regard to the dot probe task in causing faster dot probe detection latencies for probes following threatening word pairs. Beck et al.'s (1985) theory has been used to explain previous research that found that anxious individuals were faster to attend to information that was congruent with their area of concern. Bower's (1981) theory would also predict a similar result. Bower (1981) suggests that individuals who are anxious are more likely to selectively attend to and process information that is congruent with their emotional state. If an individual is anxious about sexual situations, due to experiencing a sexual trauma, then she is more likely to attend to sexually threatening information. It might also be

assumed that greater levels of force endured during the trauma might create more anxiety and therefore attenuate the selective attention effect.

Third, the resource allocation theory would also predict this effect (Kahneman, 1973; Roediger et al., 1977; Hasher & Zacks, 1979, Kahneman & Treisman, 1984). Mathews and MacLeod (1986) used the resource allocation model to explain the results they found in a study of anxious and nonanxious individuals. An extension of the resource allocation model suggests that the more anxious an individual is about a certain topic, the more cognitive resources will be allocated for information pertaining to that area of anxiety. Mathews and MacLeod (1986) tested this idea by using a distractor task in which participants were asked to respond to a simple reaction time task while at the same time listening to words. When threatening words were heard by anxious individuals, they were slower to react to the reaction time task than if they had heard neutral information. The authors suggest that this occurred because the anxious participants allocated more attentional resources to the threatening distractor than did the nonanxious participants and therefore had slower reaction times. This idea would suggest that the more anxiety the individual feels (perhaps as the result of force used during the trauma), the more attention that would be allocated to information pertaining to the assault.

A statistically nonsignificant positive correlation was found between level of violence and dot probe detection latencies in Condition 3. Within the trauma group, the vast majority of individuals had experienced actual physical violence

during the traumatic event which may account for the lack of results. Thus, there was very little variability within the trauma group on the level of violence experiences which could have led to the non-significant correlations. On the other hand, it is possible that this variable did not play a role in dot probe detection latencies to probes following sexual and violent word pairs. In an attempt to determine if any aspect of the sexual trauma correlated with the dependent variable, other correlational analyses were conducted looking at age of the individual when the trauma occurred, the number of times a trauma might have occurred, and the impact that the individual rated the trauma had on her life. However, no significant relationships were found.

Another relationship predicted by the study was that level of reported sexual anxiety would correlate negatively with dot probe detection latencies for probes following sexual words presented alone as compared to violent words presented alone. Again, this hypothesis was based on the theories of Beck et al. (1985) and Bower (1981). Both of these theories would predict that the stronger the anxiety regarding a particular type of situation, the stronger the attentional capture effect for stimuli congruent to the feared situation. The data analyses failed to reveal a statistically significant correlation between these two variables. It appears that the level of sexual anxiety an individual reports is not related to faster reaction times to dot probes following sexual word pairs.

No significant group differences were found on the dependent variable of dot probe detection latency. There are several reasons why this might be so.

First, within the trauma group, the average length of time since experiencing a sexual trauma was more than five years. It is possible that the time elapsed had diminished the emotional effect of trauma-related stimuli thus producing no significant results. The data regarding the relationships between anxiety, depression, and time elapsed since the trauma experience are consistent with this idea. Perhaps the individuals who had experienced a sexual trauma had dealt with the experience and no longer exhibited the levels of anxiety necessary to produce a significant response on the task used in this study. From an evolutionary standpoint, recovery from the experience of sexual trauma is necessary for the survival of the victim's gene pool. If an individual who has suffered a sexual assault experiences so much anxiety about sexual situations that she finds it hard to function, it is possible that she will never procreate and pass on her genetic code. The idea that recovery from anxiety can diminish results from the dot probe task does have other research support. Mogg et al. (1992) found that individuals who had recovered from clinical levels of Generalized Anxiety Disorder did not differ significantly on the dot probe task from normal individuals who did not have a history of an anxiety disorder. Those individuals who were currently experiencing clinical levels of anxiety evidenced an attentional bias towards threatening words. The authors suggested that alleviation of clinical anxiety symptoms erased whatever attentional bias existed as the result of experiencing anxiety. It might be that

using this task with individuals shortly after the trauma, when it is assumed that anxiety levels would be higher, might reveal different results.

Second, although the individuals in the trauma group reported significantly more past and present PTSD symptoms, the clinical significance of these symptoms was negligible. Only a minority of participants reported enough symptomatology to have been diagnosed with PTSD either in the past or currently. Perhaps higher levels of PTSD symptoms might have resulted in significant differences on the dependent measure.

Third, the emotion theories may be incorrect or inapplicable to a situation that includes sex. This study cited Bower's (1981) theory of mood and memory to support the idea that anxiety would affect an individuals perception of stimuli. Specifically, Bower (1981) suggested that an individual's mood would effect the information that is processed from the environment in that stimuli that are congruent with an individual's mood would be more likely to be processed. This idea would support the assertion that individuals who are anxious about sexual and violent situations, resulting from a sexual trauma, would be more likely to perceive and react more quickly to stimuli that are congruent with their emotional state. This study did not produce this finding. The presence or absence of a sexual trauma had no effect on the dependent variable of dot probe detection latencies following sexual and violent words.

The second theory cited as relevant was proposed by Beck et al. (1985). Their theory of anxiety states that anxious individuals have cognitive structures

that are content specific (i.e., danger schemata). These danger schemata influence cognitive operations including selective attention and processing. Beck et al. (1985) suggest that the danger schemata of anxious individuals cause those people to selectively perceive and process threatening information in their environments. Beck et al.'s (1985) theory would suggest that anxious individuals would respond differently to threatening information than non-anxious individuals. Again, this study did not find such a difference. Perhaps it is the presence of sexuality that modifies the results. As discussed previously, from an evolution perspective, sex is crucial to the survival of the species. If every individual who experienced a sexual trauma was then so anxious about sexual situations that he or she was unable to procreate, the risk to the survival of the species would be significant. It may be that it is to the species' benefit that anxiety about sexual situations is seemingly different than anxiety about other situations. The individuals who had experienced a sexual trauma in this study did not evidence an exaggerated anxiety response of any kind as measured by the dependent variable of dot probe detection latencies. This may be adaptive in the long run from an evolution perspective in that these individuals may not allow their experience to affect their later sexual life.

Finally, it may be that the threatening stimuli of sexual and violent words were not salient enough to produce an anxiety response in this study's participants. Perhaps for this population, stronger stimuli are needed to produce the types of response seen in other anxiety research (Mathews &

MacLeod, 1985; MacLeod et al., 1986; MacLeod & Mathews, 1988). Or again, it may be that the amount of time elapsed since the trauma affected the participants' responses. Perhaps using more salient information like sexually aggressive sentences would produce an anxiety response.

Although this study did not find significant group differences with regard to the dependent variable of dot probe detection latencies, the information that was obtained from the probe detection task is interesting. In general it appears that the presence of sexual or violent words slows responses to dot probes regardless of group membership. This points to an underlying attentional mechanism that modifies the response to probes following sexual and violent words that is not present with regard to neutral words. This issue calls for future research. Perhaps it is simply the result of more attention being allocated to emotional words that slows the response to probes following sexual and violent words in a nonclinical popuiation. This would be consistent with previous research (MacLeod & Mathews, 1988; MacLeod et al., 1986; Mogg et al., 1995) using non-anxious individuals which found that normal people tend to be slower to respond to probes following threatening information. If it is assumed that slowed responses to probes following emotional words is indicative of some type of looking away response, then this type of response may serve a homostatic and adaptive function that helps keep anxiety levels and emotionality low. Individuals who are able to avoid emotional stimuli may be better at reducing and maintaining a lower level of emotional arousal.

Research using not only negative words, like the violent words used in the current study, but positive words as well might shed more light on this issue by examining whether it is the threat content of the words that is causing the slowed response.

The two groups differed on a variety of measures of anxiety, depression, and psychopathology which supports previous research (Kinzl & Biebl, 1992; Briere & Runtz, 1988; Mancini et al., 1995; Roesler & McKenzie, 1994). Two variables of sexual trauma were considered that have not been discussed much in the literature, level of impact and time since trauma. It was found that the more time elapsed since the trauma experience, the less anxiety, depression, and sexual anxiety reported by the participants. This leads to the suggestion that time may be a strong modifying factor with regard to the negative consequences of a trauma experience. Experiencing a sexual trauma does not necessarily mean that an individual will be "damaged" forever. Although the variable of level of impact did not significantly correlate with the measures or dot probe detection latencies, it is an important area to explore when looking at this population. An individual's perception of a sexual trauma and the subsequent consequences may be an important area of future research. On a basic level, the current study has contributed to the knowledge base about the cognitive functioning of a sexual trauma population which lacks depth and number of studies.

The current study raises some interesting questions. Does the passage of time affect the anxiety response within the sexual trauma population? Is the anxiety response for individuals who have suffered a sexual trauma different than for individuals who have suffered a nonsexual trauma? Would the presence of more significant PTSD symptoms affect the anxiety response? Would a clinical population of sexual trauma victims differ from the undergraduate population? Does perception of the level of impact of the trauma on the individual's life affect the consequences of the experience? Only further research into this area will yield the answers to these questions.

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Appendices

Appendix A

Consent Form

Consent Form

1. Study title: Selective processing of sexual and violent information: A study comparing individuals with and without a history or sexual trauma

2. Performance sites: Louisiana State University

3. Investigators: Stephanie I. Bush - 388-8745 and Dr. James Geer - 388 - 4095

4. Purpose of the study: To investigate how individuals who have suffered a sexual trauma might differ in their cognitive processing of sexual and violent stimuli when compared to individuals who have not experienced a sexual trauma. This information may provide insight into why some individuals who have suffered a sexual trauma later exhibit clinically significant psychological symptoms, while others do not.

5. Subject inclusion: The study will include undergraduate female psychology students age 18 and older.

6. Subject exclusions: Females under age 18 will be excluded from the study as well as all males. In addition, individuals who are unable to read (given that the computer task requires reading ability) will also be excluded.

7. Description of study: Participants will be asked to take part in a computer task in which they will be presented with words that will be either neutral, general violence-related, or sexually non-traumatic or a combination of these word types. The participant will be informed as to what type of words she will see. In addition, participants' responses (pressing the space bar) to these words will be timed. The subjects will also be asked to complete questionnaires with probing questions about their psychological history, sexual experiences, sexual traumas, and emotions. In addition, participants will be asked to participate in a structured interview concerning anxiety disorders that will also contain questions regarding alcohol and substance abuse and past physical and emotional conditions. The experiment should take approximately one to one and a half hours to complete for each participant.

8. Benefits: The participant will directly benefit from the experiment by obtaining extra credit points for their chosen psychology class. The study may benefit others by contributing to the limited information now available about how individuals who have experienced a sexual trauma process threatening information. It may also help in furthering our understanding of why some individuals with a sexual trauma experience serious psychological symptoms while others do not.

9. Risks: It is possible that participants may experience emotional distress due to the sensitive nature of the interview and questionnaire questions. If you are experiencing uncomfortable feelings due to your participation, please call the LSU Student Mental Health Center at 388-8774 to speak to a counselor.

10. Removal: Participants who have completed the computer task, questionnaires, and interview have fulfilled all the study requirements.

11. Right to refuse: Participants may choose NOT to participate or withdraw from the study at any time with no penalty and will receive the extra credit points.

12. Privacy: The results of the study may be published. All responses to the questionnaires and results obtained from the computer task will be **confidential** and your name will in no way be associated with the data from the study. All results are based on group responses and not the responses of individuals. Only individual directly involved with this research will be privy to individual results and data.

13. Release of information: Any information obtained by participation in this study will not be released in any way to any person. All records are confidential and will not be identified by the name of the participant.

14. Signatures:

The study has been discussed with me and all my questions have been answered. I understand that additional questions regarding the study should be directed to investigators listed above. I understand that if I have questions about subject rights or other concerns, I can contact Charles E. Graham, Chairman, Institutional Review Board, (504) 388 - 1492. I agree with the terms above and acknowledge that I have been given a copy of the consent form.

_Signature of Volunteer Date

_Investigator Date

Appendix B

Word lists

Sexual Words	Violent Words	Neutral Words
orgasm	assaultive	children
intercourse	combative	groceries
sperm	assassination	vote
vagina	abusive	magazine
penis	harm	library
clitoris	assailant	wrist
fellatio	brutal	eyebrow
lust	thrashing	sponge
genitalia	injure	ostrich
ejaculate	trauma	percent
copulate	fight	fashion
nipples	mauling	cabinet
semen	mutilating	alligators
testicles	torture	package
cunnilingus	struggle	round
scrotum	homicide	broom
fornication	brawl	credit
masturbation	kicking	stereo
tits	annihilation	restaurant
crotch	killing	dishwasher
cum	murder	baboon
pussy	destructive	telephone
prick	lacerating	spatula
whore	fatal	river

** The sexual and violent words presented are all of the target words used in the study.

Appendix C

State-Trait Anxiety Inventory (STAI)

SELF-EVALUATION QUESTIONNAIRE

Developed by Charles D. Spielberger
in collaboration with
R. L. Gorsuch, R. Lushene, P. R. Vagg, and G. A. Jacobs

STAI Form Y-1

_____ Date _____ S ____

Age _____ Sex: M ____ F ____ T ____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	①	②	③	④
2. I feel secure	①	②	③	④
3. I am tense	①	②	③	④
4. I feel strained	①	②	③	④
5. I feel at ease	①	②	③	④
6. I feel upset	①	②	③	④
7. I am presently worrying over possible misfortunes	①	②	③	④
8. I feel satisfied	①	②	③	④
9. I feel frightened	①	②	③	④
10. I feel comfortable	①	②	③	④
11. I feel self-confident	①	②	③	④
12. I feel nervous	①	②	③	④
13. I am jittery	①	②	③	④
14. I feel indecisive	①	②	③	④
15. I am relaxed	①	②	③	④
16. I feel content	①	②	③	④
17. I am worried	①	②	③	④
18. I feel confused	①	②	③	④
19. I feel steady	①	②	③	④
20. I feel pleasant	①	②	③	④

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SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Date _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	①	②	③	④
22. I feel nervous and restless	①	②	③	④
23. I feel satisfied with myself	①	②	③	④
24. I wish I could be as happy as others seem to be	①	②	③	④
25. I feel like a failure	①	②	③	④
26. I feel rested	①	②	③	④
27. I am "calm, cool, and collected"	①	②	③	④
28. I feel that difficulties are piling up so that I cannot overcome them	①	②	③	④
29. I worry too much over something that really doesn't matter	①	②	③	④
30. I am happy	①	②	③	④
31. I have disturbing thoughts	①	②	③	④
32. I lack self-confidence	①	②	③	④
33. I feel secure	①	②	③	④
34. I make decisions easily	①	②	③	④
35. I feel inadequate	①	②	③	④
36. I am content	①	②	③	④
37. Some unimportant thought runs through my mind and bothers me	①	②	③	④
38. I take disappointments so keenly that I can't put them out of my mind	①	②	③	④
39. I am a steady person	①	②	③	④
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	①	②	③	④

Appendix D

Beck Depression Inventory (BDI)

BDI®

Date: _____

_____ Marital Status: _____ Age: _____ Sex: _____

Occupation: _____ Education: _____

This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the number (0, 1, 2 or 3) next to the one statement in each group which **best** describes the way you have been feeling the **past week, including today.** If several statements within a group seem to apply equally well, circle each one. **Be sure to read all the statements in each group before making your choice.**

1	0	I do not feel sad.
	1	I feel sad.
	2	I am sad all the time and I can't snap out of it.
	3	I am so sad or unhappy that I can't stand it.
2	0	I am not particularly discouraged about the future.
	1	I feel discouraged about the future.
	2	I feel I have nothing to look forward to.
	3	I feel that the future is hopeless and that things cannot improve.
3	0	I do not feel like a failure.
	1	I feel I have failed more than the average person.
	2	As I look back on my life, all I can see is a lot of failures.
	3	I feel I am a complete failure as a person.
4	0	I get as much satisfaction out of things as I used to.
	1	I don't enjoy things the way I used to.
	2	I don't get real satisfaction out of anything anymore.
	3	I am dissatisfied or bored with everything.
5	0	I don't feel particularly guilty.
	1	I feel guilty a good part of the time.
	2	I feel quite guilty most of the time.
	3	I feel guilty all of the time.
6	0	I don't feel I am being punished.
	1	I feel I may be punished.
	2	I expect to be punished.
	3	I feel I am being punished.
7	0	I don't feel disappointed in myself.
	1	I am disappointed in myself.
	2	I am disgusted with myself.
	3	I hate myself.
8	0	I don't feel I am any worse than anybody else.
	1	I am critical of myself for my weaknesses or mistakes.
	2	I blame myself all the time for my faults.
	3	I blame myself for everything bad that happens.
9	0	I don't have any thoughts of killing myself.
	1	I have thoughts of killing myself, but I would not carry them out.
	2	I would like to kill myself.
	3	I would kill myself if I had the chance.
10	0	I don't cry any more than usual.
	1	I cry more now than I used to.
	2	I cry all the time now.
	3	I used to be able to cry, but now I can't cry even though I want to.
11	0	I am no more irritated now than I ever am.
	1	I get annoyed or irritated more easily than I used to.
	2	I feel irritated all the time now.
	3	I don't get irritated at all by the things that used to irritate me.
12	0	I have not lost interest in other people.
	1	I am less interested in other people than I used to be.
	2	I have lost most of my interest in other people.
	3	I have lost all of my interest in other people.
13	0	I make decisions about as well as I ever could.
	1	I put off making decisions more than I used to.
	2	I have greater difficulty in making decisions than before.
	3	I can't make decisions at all anymore.

_____ Subtotal Page 1 **CONTINUED ON BACK**

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14
- 0 I don't feel I look any worse than I used to.
- 1 I am worried that I am looking old or unattractive.
- 2 I feel that there are permanent changes in my appearance that make me look unattractive.
- 3 I believe that I look ugly.

15
- 0 I can work about as well as before.
- 1 It takes an extra effort to get started at doing something.
- 2 I have to push myself very hard to do anything.
- 3 I can't do any work at all.

16
- 0 I can sleep as well as usual.
- 1 I don't sleep as well as I used to.
- 2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
- 3 I wake up several hours earlier than I used to and cannot get back to sleep.

17
- 0 I don't get more tired than usual.
- 1 I get tired more easily than I used to.
- 2 I get tired from doing almost anything.
- 3 I am too tired to do anything.

18
- 0 My appetite is no worse than usual.
- 1 My appetite is not as good as it used to be.
- 2 My appetite is much worse now.
- 3 I have no appetite at all anymore.

19
- 0 I haven't lost much weight, if any, lately.
- 1 I have lost more than 5 pounds.
- 2 I have lost more than 10 pounds.
- 3 I have lost more than 15 pounds.

I am purposely trying to lose weight by eating less. Yes _____ No _____

20
- 0 I am no more worried about my health than usual.
- 1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
- 2 I am very worried about physical problems and it's hard to think of much else.
- 3 I am so worried about my physical problems that I cannot think about anything else.

21
- 0 I have not noticed any recent change in my interest in sex.
- 1 I am less interested in sex than I used to be.
- 2 I am much less interested in sex now.
- 3 I have lost interest in sex completely.

_____ Subtotal Page 2

_____ Subtotal Page 1

_____ Total Score

Appendix E

Sexual Experiences Scale (SES)

SEXUAL EXPERIENCES SURVEY

This questionnaire seeks to gain information about sexual experiences and the possible impact those experiences have had on your life. It also asks at what age those experiences occurred and how many times they occurred (please estimate). Please answer each question "Yes" or "No" and rate the impact on your life using the seven point scale provided. If you answered "No" leave the age question blank or write N/A. Please read each question carefully!

1.....2.....3.....4.....5.....6.....7
No impact Moderate impact Severe impact

(*No impact* implies that the incident created no uncomfortable emotional or physical effects on you;
Moderate impact implies that the event created some distressing emotional or physical consequence, such as depression, anxiety, or some other effect;
Severe impact implies that the incident has created debilitating and harmful effects in your life, such as the inability to go to work or school, extreme depression or anxiety, or other such consequences)

Have you:

1. Had sexual intercourse with a person even though you didn't really want to because he/she threatened to end your relationship otherwise or used some other type of emotional pressure? **YES NO**

   1.....2.....3.....4.....5.....6.....7
   No impact Moderate impact Severe impact

   At what age did this occur? _____ How many times did it occur? _____

2. Had sexual intercourse with a person when you didn't want to because you felt pressured by his/her continual arguments? **YES NO**

   1.....2.....3.....4.....5.....6.....7
   No impact Moderate impact Severe impact

   At what age did this occur? _____ How many times did it occur? _____

3. Been in a situation in which a person had obtained sexual intercourse with you by saying things he/she didn't really mean? **YES NO**

1.....2.....3.....4.....5.....6.....7
No impact Moderate impact Severe impact

At what age did this occur? _____ How many times did it occur? _____

4. Been in a situation where a person used some degree of physical force (twisting your arm, holding you down, etc..) to try to make you engage in kissing or petting when you didn't want to? **YES NO**

1.....2.....3.....4.....5.....6.....7
No impact Moderate impact Severe impact

At what age did this occur? _____ How many times did it occur? _____

5. Been in a situation where a person tried to get sexual intercourse with you when you didn't want to by threatening to use physical force (twisting your arm, holding you down, etc..) if you didn't cooperate, but for various reasons sexual intercourse didn't occur? **YES NO**

1.....2.....3.....4.....5.....6.....7
No impact Moderate impact Severe impact

At what age did this occur? _____ How many times did it occur? _____

6. Been in a situation where a person used some degree of physical force (twisting your arm, holding you down, etc..) to try to get you to have sexual intercourse with him/her when you didn't want to, but for various reasons sexual intercourse did not occur? **YES NO**

1.....2.....3.....4.....5.....6.....7
No impact Moderate impact Severe impact

At what age did this occur? _____ How many times did it occur? _____

7. Had sexual intercourse with a person when you didn't want to because he/she threatened to use physical force (twisting your arm, holding you down, etc..) if you didn't cooperate? **YES NO**

1.....2.....3.....4.....5.....6.....7
No impact Moderate impact Severe impact

At what age did this occur? _____ How many times did it occur? _____

8. Had sexual intercourse with a person when you didn't want to because he/she used some degree of physical force (twisting your arm, holding you down, etc..)? **YES NO**

1.....2.....3.....4.....5.....6.....7
No impact Moderate impact Severe impact

At what age did this occur? _____ How many times did it occur? _____

9. Been in a situation where a person obtained sexual acts with you such as anal or oral intercourse when you didn't want to by threatening to use force. **YES NO**

1.....2.....3.....4.....5.....6.....7
No impact Moderate impact Severe impact

At what age did this occur? _____ How many times did it occur? _____

10. Been in a situation where a person obtained sexual acts with you such as anal or oral intecourse when you didn't want to by using physical force (twisting your arm, holding you down, etc..)? **YES NO**

1.....2.....3.....4.....5.....6.....7
No impact Moderate impact Severe impact

At what age did this occur? _____ How many times did it occur? _____

Appendix F

Sexual Situations Anxiety Rating Scale

Please answer the following questions using the scale provided below. (You may answer N/A if the item does not apply to you).

1.....2.....3.....4.....5

not at all anxious | somewhat anxious | very anxious

_____ 1. How do you feel during intercourse with your partner?

_____ 2. How do you feel while kissing a date/sexual partner?

_____ 3. How do you feel during foreplay with a date/sexual partner?

_____ 4. How do you feel while hugging a date/sexual partner?

_____ 5. How do you feel when touching a member of the opposite sex?

Appendix G

Demographics Questionnaire

Demographic Questionnaire

Please answer all questions truthfully. Remember that all answers are confidential!!

1. What is your age? _____
2. What year of college are you? Freshman/Sophomore/Junior/Senior
3. What is your major? _____
4. What racial group do you consider yourself to be a part of? American Indian/Asian/Black/Caucasian/Other_____
5. Are you currently taking any medications? (If so, please list)

_____

6. Have you ever received psychological treatment? _____ (If so, for what?)_____
7. One definition of sexual trauma is any unwanted or forced physical sexual contact that may include: fondling, oral sex, anal sex, or vaginal penetration.

   Have you ever suffered a sexual trauma? Yes No
8. Do anyone in your family member (that you know of) suffer from a diagnosed psychological disorder? _____ (If so, what is the diagnosis and their relation to you?)_____

_____

9. Where were you born?_____
10. Are you married or single? _____
11. If you are single, are you in a committed romantic relationship at this time?
12. What religion, if any, do you consider yourself to be?_____
13. Have you ever had a head injury in which you lost consciousness?_____
14. Do you have any children? _____ (If yes, please list gender and ages)

_____

15. Do you have any serious medical problems? _____ (If so, what are they?)

_____

Vita

Stephanie I. Bush was born on April 13, 1970, in Parkersburg, West Virginia. She obtained her bachelor's degree in psychology from West Virginia University in December, 1991. She began her graduate education at Louisiana State University in 1992 with a major in adult clinical psychology. Stephanie earned her master's degree in 1995 and finished her clinical internship at the University of Alabama - Birmingham in 1997. She then returned to Baton Rouge to complete her doctoral program and has taught several psychology classes at L.S.U. Stephanie will receive her degree of Doctor of Philosophy in August, 1999. She hopes to one day teach at a small college where she can become more involved in her students' education.